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Set of Nuclear-Mass Relations and a Resultant Mass Table*

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Two new independent mass relations are derived and are shown to be consistent with several existing nuclear models. The most general functional dependence on proton number, neutron number, and mass number (or isospin value) of masses which satisfy these relations exactly is discussed, and a procedure for determining the values of these functions which give a best least-squares fit to the body of known masses is developed. The functions which give the best over-all fit are listed together with the resulting theoretical mass table which shows the discrepancies to known masses and the theoretical values for proton, neutron, and alpha-particle decay energies.

CONTENTS

I. INTRODUCTION

A basic property of a system of neutrons and protons is the lowest energy state of the ensemble. The determination of these ground-state energies has occupied the attention of researchers since the earliest days of nuclear physics (von Weizsäcker, 1935; Bethe, 1936).[1] Attempts to calculate nuclear binding energies from a fundamental point of view have met with little quantitative success due to the absence of an exact theory for this finite, many-body problem and insufficient knowledge of the nucleon–nucleon interaction appropriate to finite nuclei.

Four basic, approximate, empirical techniques for using known nuclear masses to predict the masses of yet unknown nuclei have been employed. The first parameterizes the nucleus as a charged, two-component liquid drop (Myers and Swiatecki, 1966; unpublished; Seeger and Perisho, unpublished) and fixes the values of the free parameters by requiring that the resulting equation gives the best values for the known masses. This approach of course neglects pairing and shell effects which must be appended to this model in an *ad hoc* fashion (Cameron and Elkin, 1965; unpublished) before any quantitative agreement can be achieved. This model, however, has the virtue (or possible danger) that physical significance may be attached to the extracted values of parameters. For example, the constant associated with the volume binding energy per particle in this model is a binding energy that infinite nuclear matter calculations try to reproduce.

A second approach employs a shell model (deShalit and Talmi, 1963) to parameterize nuclear masses. This approach is unsatisfactory because general analytic expressions for the binding energy can be derived only using extremely simple versions of the shell model. The few cases where the shell model works well usually occur when one is not too far from closed shells and

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[1] A very useful reference for work on nuclear mass formulas through 1964 is J. Wing (unpublished).

only one type nucleon is in the valence shell (see, for example, Talmi, 1964). Even when one is not far from closed shells, if both neutrons and protons are present, this model has difficulty (Ginocchio and French, 1963) in accounting for the observed binding energies. However, nuclear masses were reproduced rather successfully (Zeldes, Grill, and Simievis, 1967) with a shell model and the assumption that the residual interaction varies linearly with the number of particles in the valence shell.

The third approach (Bohr and Wheeler, 1939) takes cognizance of the shape of the nuclidic mass surface and selects functions of the variables N and Z or T_Z and A to best reproduce the shape of this surface.

The fourth procedure, the one adopted here, makes use of relationships that exist among nuclear masses. Of course, an explicit equation obtained from one of the procedures mentioned above implies particular relationships among the mass differences of adjacent nuclei. However, these relationships are not emphasized. As an example of stressing mass differences, Franzini and Radicati (1963) compared the ratios of certain mass differences to the predictions of the supermultiplet theory (SMT). While there was general agreement between the observed ratios and the predictions of SMT, these particular ratios are not a very sensitive test (Jänecke, 1965). The mass differences that occur are largely a consequence of the symmetry energy.

Jänecke (1965), using the Weizsäcker–Fermi form of the liquid-drop model, showed that the energy differences between the lowest lying states of different isospin in adjacent nuclei are simply related. Applying this notion to nuclear ground states, Jänecke found that the predicted relationship held very well in some cases if pairing effects were taken into account by the assumption that the symmetry energy has an approximate $T(T+1)$ form.

Earlier work presented by two of the authors of this paper (Garvey and Kelson, 1966) was an extension and generalization of Jänecke's work. The set of mass relations proposed by Garvey and Kelson is more general, more accurate, and more readily usable than that of Jänecke. Following the publication of the above paper, it was brought to our attention by N. Feather that he had written down one of these equations (Feather, 1965) as a result of extensive empirical study. However, his emphasis on the nature of the equation is very different from what is presented in this paper. We will show that the mass relations employed here have a simple physical basis which can be reasonably *assumed to be a rule* for nuclear masses. These rules can then be used with existing masses to construct a complete mass table. Special cases of these relations were also obtained by Brink and Kerman (1959) who found them to be a consequence of a Nilsson model or a $j\cdot j$ coupling model with $j=\frac{1}{2}$.

It will be shown that the mass relations employed are consistent with any of several well-known, independent-particle models so that no new picture of the nucleus emerges as a result of this study. The primary value of this work lies in the fact that it makes very few assumptions about nuclear structure and uses existing experimental masses in an optimal fashion for the prediction of yet unmeasured masses. The knowledge of masses far from the valley of beta stability is essential for understanding r-type nuclear synthesis and nuclear fission. The procedure outlined here, we believe, gives the best extrapolation to this very neutron-rich region. More directly, reliable values for nuclear masses beyond the currently measured range are required by experimentalists who wish to study the limits of particle stability (neutron and proton drip lines) or who seek to detect new types of particle decay [e.g., delayed emission of one or two protons (Goldanskii, 1966)].

II. DERIVATION AND APPLICATIONS OF MASS RELATIONS

A. Derivation

As was pointed out above, the properties of a system of A nucleons (Z protons and N neutrons) are generally determined by a many-body Hamiltonian, containing one-, two-, and possibly many-body operators. As the exact form of the Hamiltonian is not known, the lowest energy state $M(N, Z)$ cannot be calculated directly from first principles. The description of the function $M(N, Z)$, apart from its connection to a basic Hamiltonian, is clearly very difficult. However, differences between the masses of neighboring nuclei $M(N+\Delta N, Z+\Delta Z)-M(N, Z)$ can perhaps be understood from general physical considerations. Before delving into the mathematical aspects of this approach, we must emphasize that, from a conceptual point of view, attacking nuclear masses in this manner represents a weakening of our understanding of the physical aspects of the nuclear system. Nevertheless, from a practical standpoint, particularly where extrapolations are involved, it is a more practical and dependable technique.

Our approach is to construct a difference equation of the general form

$$\sum_{i=1}^{\alpha} C_i M(N_i, Z_i)=0,$$

where $|C_i|=1$. The sum over some subset of masses is to be made approximately equal to zero by a judicious choice of the linear combination so that all interactions between nucleons cancel to first order. It is clear that for this to take place at least the *number* of neutron–neutron, proton–proton, and neutron–proton interactions must cancel. The number of n–n and p–p interactions are made to cancel by the requirement that a given number of protons or neutrons appear in two

different nuclei in the above equation with appropriate signs, i.e., $C_iZ_i=-C_jZ_j$, etc. This restriction forces α to be an even number. Nontrivial equations are obtained only for $\alpha\geq 6$. For $\alpha=6$ we have an equation of the form

$$M(N_1, Z_1)+M(N_2, Z_2)+M(N_3, Z_3)-M(N_3, Z_4) -M(N_1, Z_2)-M(N_2, Z_3)\cong 0.$$

The number of n–n and p–p interactions clearly cancel in the above expression. The number of n–p interactions is NZ; thus, the additional condition

$$\sum_{i=1}^{\alpha} C_iN_iZ_i=0$$

is employed to cancel their effect. Defining $\Delta Z_1=Z_1-Z_i$ and $\Delta N_i=N_2-N_i$, we have from the conditions above

$$\Delta Z_2\Delta N_1=\Delta Z_3\Delta N_3.$$

To avoid generating trivial identities, it is necessary that $\Delta Z_2\neq\Delta Z_3$ and $\Delta N_1\neq\Delta N_3$. The simplest choice that can be made for the products $\Delta Z_2\Delta N_1$ and $\Delta Z_3\Delta N_3$ is ± 1. The choice (-1) leads to an equation, written by Garvey and Kelson (1966), of the form

$$M(N+2, Z-2)-M(N, Z)+M(N, Z-1) -M(N+1, Z-2)+M(N+1, Z) -M(N+2, Z-1)=0, \quad (1)$$

while the choice of $\Delta Z_2\Delta N_1=\Delta Z_3\Delta N_3=1$ yields a new equation:

$$M(N+2, Z)-M(N, Z-2)+M(N+1, Z-2) -M(N+2, Z-1)+M(N, Z-1)-M(N+1, Z)=0. \quad (2)$$

The relationship between these two equations becomes more transparent if they are written in an (A, T_Z) representation $[A=N+Z,\ T_Z=\frac{1}{2}(N-Z)]$. We then obtain for Eqs. (1) and (2), respectively,

$$M(A, T_Z+2)-M(A, T_Z)+M(A-1, T_Z+\tfrac{1}{2}) -M(A-1, T_Z+\tfrac{3}{2})+M(A+1, T_Z+\tfrac{1}{2}) -M(A+1, T_Z+\tfrac{3}{2})=0 \quad (3)$$

and

$$M(A+2, T_Z+1)-M(A-2, T_Z+1) +M(A-1, T_Z+\tfrac{3}{2})-M(A+1, T_Z+\tfrac{3}{2}) +M(A-1, T_Z+\tfrac{1}{2})-M(A+1, T_Z+\tfrac{1}{2})=0. \quad (4)$$

Equation (3) relates differences between three pairs of masses; the members of each pair have the same A but different T_Z. Equation (4) again relates three pairs of mass differences but in this case each member of a pair has the same T_Z but different A. Figures 1(a) and 1(b) show the pattern of the two equations as they appear in N, Z space.

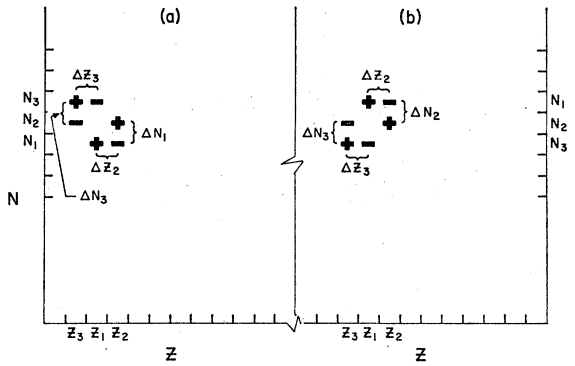

FIG. 1. (a) Display of the form of Eqs. (1) or (3) in the NZ plane. The sign appropriate to each mass is indicated at its respective location. (b) Display of the form of Eqs. (2) or (4) in the NZ plane. The sign appropriate to each mass is indicated at its respective location.

Equation (1) [or (3)] was tested on a body with known nuclear masses (Mattauch, Thiele, and Wapstra, 1965) with the conditions $A>16$, $N\geq Z$, and if $N=Z$, N may not be odd. There are 621 test cases and the magnitude of the average deviation is 198 keV. When Eq. (2) [or (4)] was tested over the same body of data, i.e., $A>16$, with no mass in an equation being odd–odd, $T_Z=0$ nucleus, 755 cases were found. The magnitude of the average deviation in this case is 189 keV. The deviations are of a more or less random nature, and no simple tests could show marked nonrandom behavior in any region of the periodic table. The magnitude of the errors decreases somewhat with increasing A. Figure 2 shows a plot of the difference between relationship (1) and actual data. Often the relations work to much better accuracy than the errors quoted for the respective masses by Goldanskii (1966). This is most likely due to the fact that many of the errors quoted in this mass table are not independent, and in applying the mass relations over a set of adjacent nuclei, sources of systematic errors cancel.

The reason that $N>Z$ is required for relation (1) is that an improper crossing of the $N=Z$ line will lead to cases where the isospin dependence of the residual interactions will not properly cancel. For example, with relation (1) written in an A, T_Z representation, if the symmetry energy has a general quadratic dependence on $T(T=|T_Z|$ for low-lying states), then it will cancel exactly for all cases with $N\geq Z$ in Eq. (1). On the other hand, if $N=Z-1$, the above cancellation in the symmetry energy will not occur and so the relationship will not hold. In the case of relation (2), the differences are always taken between states of the same isospin so

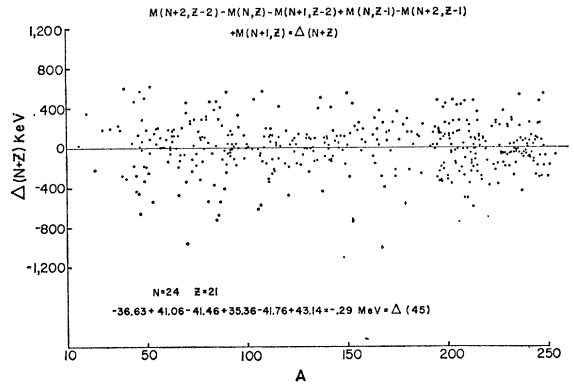

FIG. 2. Plot of the deviations resulting from applying Eq. (1) to all measured masses with $N\geq Z$, $Z\geq 6$, and $N\geq 10$. The masses used for this figure are from J. H. E. Mattauch *et al.* [Nucl. Phys. 67, 1 (1965)].

that this difficulty does not occur. If one wishes to use Eq. (1) in the region $Z\geq N$, the following form should be employed:

$$M(N-2,Z+2)-M(N,Z)+M(N-1,Z)-M(N-2,Z+1)+M(N,Z+1)-M(N-1,Z+2)=0. \quad (5)$$

Table I shows the deviations from zero obtained with Eq. (1) for all cases with $N=Z$ and $N+Z\geq 16$. When one of the masses in Eq. (1) or (2) is odd-odd with $T_Z=0$, the equation is observed not to hold within 1 MeV. The differences are between 1 and 2 MeV and always negative for Eq. (1). Odd-odd nuclei with $T_Z=0$ have well-known special properties that set them apart from the other nuclei. This feature will be discussed more thoroughly later in this paper.

Before further discussion of the basis of these relationships, it is useful to write down the form of the most general expressions for nuclear masses that will satisfy Eqs. (1) and/or (2). To satisfy Eq. (1), the masses need only be expressible in a form

$$M(N,Z)=g_1(N)+g_2(Z)+g_3(N+Z). \quad (6)$$

It may be shown that Eq. (6) is a necessary condition where g_1, g_2, and g_3 are arbitrary functions of their arguments. Most simply, the form of Eq. (6) is obtained because Eq. (1) was derived so that a given N or Z always appears twice and with opposite sign. The same A value always appears twice [see Eq. (3)] and with opposite sign. Thus, the simple form above is sufficient to satisfy Eq. (1). To satisfy Eq. (2), it is necessary and sufficient that the masses be expressible in the form

$$M(N,Z)=f_1(N)+f_2(Z)+f_3(N-Z), \quad (7)$$

where f_1, f_2, and f_3 are arbitrary functions of their arguments. In order that the masses exactly satisfy both Eqs. (1) and (2) it can be shown that they must obey the far more stringent relationship

$$M(N,Z)=h_1(N)+h_2(Z)+\lambda NZ+\tfrac{1}{2}\mu[1-(-1)^{NZ}], \quad (8)$$

where h_1 and h_2 are arbitrary functions and λ and μ are constants. This latter form will be seen to be too restrictive to adequately represent nuclear masses.

From this point on, the mass relations implicit in Eqs. (1) and (2) will be treated separately even though they are derived from the same set of physical assumptions. Equations (6) and (7) show that these two equations place rather different restrictions on the behavior of nuclear masses; detailed examination of Eq. (8), which holds if both (6) and (7) are simultaneously satisfied, shows it to be not in accord with experimental data.

TABLE I. The deviations from zero encountered when Eq. (1) is employed for $N=Z$. When isotopic inversion occurs (lowest $T=0$ level lies above lowest $T=1$ level) in a self-conjugate odd–odd nucleus, the energy of the lowest $T=0$ state is employed rather than the energy of the ground state. Note the systematic deviations from zero encountered when $N=Z$ equals an odd number.

	Deviations (MeV)	
$N+Z$	N even	N odd
16	0.01	
18		−1.9±0.3
20	0.34	
22		−2.05±0.03
24	−0.23	
26		−1.9±0.3
28	0.19	
30		−2.1±0.3
32	0.08	
34		−0.93±0.3
36	0.22	
38		−0.89±0.3
40	0.04	
42		−0.86
44	0.48	
46		−0.53
48	0.07	
50		−1.06
52	0.10	
54		−0.49
56	0.00	

B. Extentions of the Mass Relations

As was pointed out by Garvey and Kelson (1966), Eq. (1) [and (2)] can be used as a recurrence relation to generate new relations which have a larger range in N and Z than Eq. (1) [or (2)]. The most interesting of these derived relationships which follows from Eq. (1) is the following:

$$M(N+l, Z-l)-M(N, Z)+\sum_{i=1}^{l}[M(N-1+i, Z-l+i)-M(N+i, Z-l-1+i)]=0, \quad (9)$$

where all nuclei are confined to the $N \geq Z$ region and no mass may be odd-odd with $T_Z=0$. Figure 3 shows the structure of these equations for $l=2$, 3, and 6. It is therefore clear that with relationships such as these, masses far from the valley of stability can be expressed in terms of masses in the valley of stability. With regard to particle stability (say neutron stability) of a particular species far from the region of known masses, it is useful to observe that relations of the following type may be shown to follow from Eq. (1):

$$M(N+l-1, Z-l)-M(N, Z-1)+\sum_{i=1}^{l-1} M(N-1+i, Z-l+1)-M(N+i, Z-l-1+i)=0. \quad (10)$$

The neutron separation energy of the nucleus with $N+l$ neutrons and $Z-l$ protons is defined as

$$S_n(N+l, Z-l)=[M(N+l-1, Z+l)-M(1, 0)]-M(N+l, Z-l),$$

where the mass excesses of the particles are employed. On using Eqs. (1) and (10) one obtains

$$S_n(N+l, Z-l)=M(N, Z-1)-M(N, Z)+M(N+l-1, Z)-M(N+l, Z-1)+M(1, 0) \quad (11)$$

or in terms of binding energies

$$S_n(N+l, Z-l)=B(N, Z)-B(N, Z-1)+B(N+l, Z-1)-B(N+l-1, Z). \quad (12)$$

This approach has been used to predict the particle stability of light nuclei (Jänecke, 1965) far from the valley of stability and has been very successful, as it properly accounts for ^{8}He, ^{14}B, and ^{15}B (Poskanzer, Cosper, Hyde, and Cerny, 1966). Equation (11) with $N=6$, $Z=5$, and $l=2$ predicted ^{11}Li to be stable against decay to ^{10}Li by 0.3±0.20 MeV. The ^{12}Be mass excess used in this calculation is 25.1 MeV which agrees with the recently observed positions (Cerny and Garvey private communication) of the lowest lying $T=2$ states in ^{12}B and ^{12}C. ^{10}Li as given by Garvey and Kelson was predicted to be unstable against decay to ^{9}Li+n by some 2.0 MeV. Thus one would expect ^{11}Li, which has recently been observed (Poskanzer *et al.*, 1966) to be particle stable, to decay into ^{9}Li+2n. When the Garvey and Kelson paper (1966) was published, Eq. (2) was not known, and because of the odd-odd, $T_Z=0$ problem with Eq. (1), a guess based on systematics had to be used to estimate the mass of ^{10}Li. However, if one uses Eq. (2) to obtain

$$S_n(7, 3)=M(8, 5)-M(8, 4)-M(7, 5)+M(6, 4)+M(1, 0),$$

a separation energy of −1.2±0.4 MeV is obtained for ^{10}Li. In the light of this calculation, the two-neutron separation energy of ^{11}Li becomes 0.9±0.6 MeV. Thus, that it appears to be particle stable is not as surprising as might be inferred from the Garvey and Kelson paper (1966). Errors of the order of 1 MeV should be expected in the very light nuclei ($A<16$) because the interactions between nucleons are strong and their variations are large.

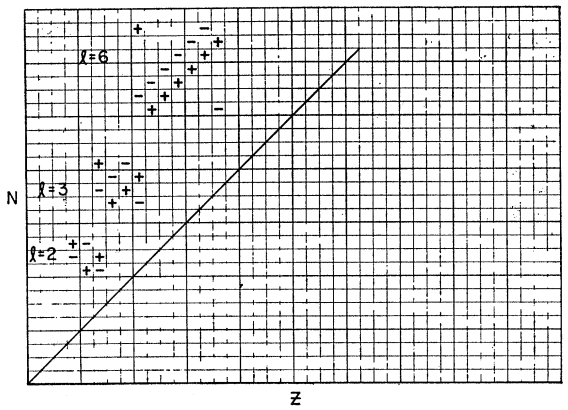

FIG. 3. Plot of the form of the equations resulting from the use of Eq. (9) with $l=2$, 3, and 6. The sign appropriate to each mass is indicated at its respective location.

C. Discussion of the Mass Relations

A simple picture shown in Fig. 4(a) illustrates why these mass relations work so well. The figure depicts idealizations of the single-particle states entering into a particular relationship. The particles are shown occupying the energy levels corresponding to neutrons and protons in the lowest orbital allowed. The levels refer to particular single-particle levels of the nucleus and their time-reversed state. This picture shows that in addition to having the number of interactions correct as assured by our derivation, the single-particle energies

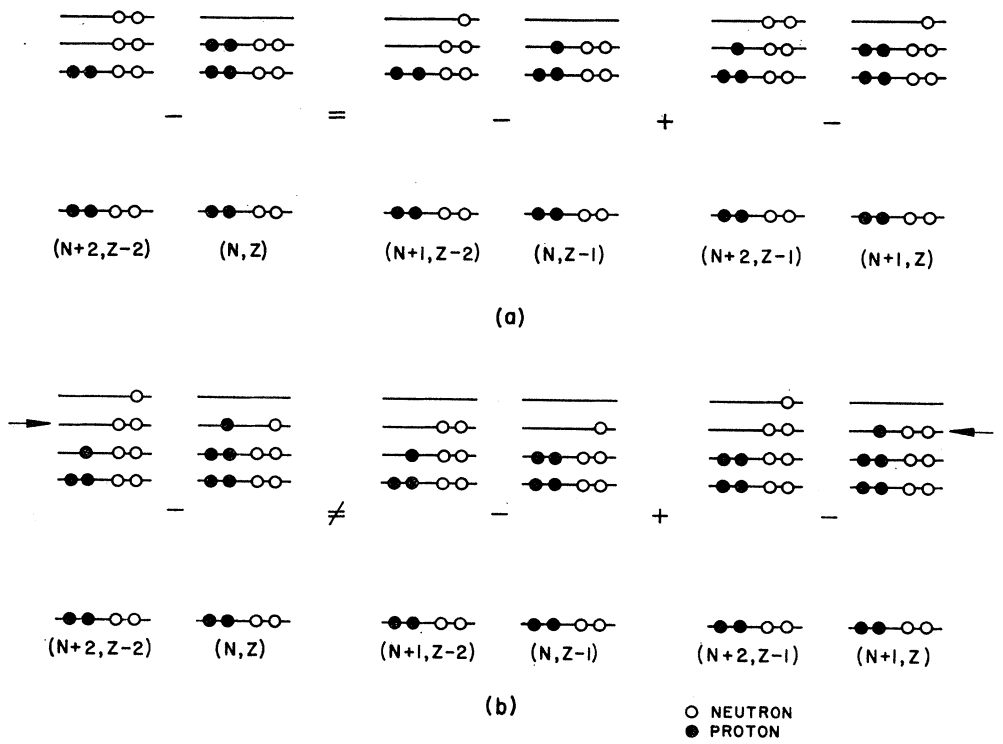

FIG. 4. (a) Diagram of the single-particle energy levels entering into Eq. (1) for the case $N=Z=2n$. The single-particle picture illustrated here is not in general correct but is appropriate to the Nilsson model or the supermultiplet model. From the figure it is clear that a set of identities is had for each single-particle level and that all two-body interactions between particles in different levels cancel. (b) Diagram of the single-particle levels entering into Eq. (1) with $N=Z=2n+1$. In this case it is evident that the interactions within the level indicated with an arrow do not cancel. The effect of this noncancellation is observed experimentally (see Table I). As the total number of interactions is the same on both sides of the equals sign, the imbalance is due to the fact that the neutron–proton interaction is stronger between particles in the same level than it is when the two particles are in different levels.

and the residual interactions within a particular level properly cancel, as do all the detailed interactions between particles in different levels. Thus by virtue of requiring cancellation in the number of neutrons, protons, and the product NZ, the interactions between these particles also cancel in the limit that the nuclear field changes slowly. Brink and Kerman (1959) provided two specific cases of the above-mentioned relations using the Nilsson model as a basis and applied their result to the $2s$–$1d$ shell to show how well it worked. It is now clear that the relationships are far more general and hold equally well in the region of spherical nuclei even when major shells are being crossed. While Fig. 4(a) does not constitute any proof of Eqs. (1) and (2), it provides a consistent and reliable guide as to when the equations will hold. Figure 4(b) illustrates this point; it is obtained from Fig. 4(a) by adding one neutron and one proton to each of the nuclei. This is a case with $N=Z$, with N odd. The detailed identity which held in Fig. 4(a) is now broken. Indeed for these cases ($N=Z=$odd number) the disagreements between relations (1) and the experimentally determined masses are of the order of -1 to -2 MeV over those nuclei where the relevant masses are known. [Table I gives the values of Eq. (1) when it is summed around a loop for the case $N=Z$ with N even and N odd.] This will be shown in the next section to arise from the particular properties of $T_Z=0$, odd–odd nuclei. It can also be seen by a diagram of the type shown in Figs. 4(a) and 4(b) that when $N=Z$, Eq. (1) will not hold. This case is due to an imbalance in the symmetry energy, i.e., the number of $T=1$ and 0 interactions is not equal.

There are many sound physical reasons for believing that the difference equations (1) and (2) should not hold exactly:

(1) The corresponding single-particle levels and residual interactions all appear in different nuclei. These quantities will clearly change from one nucleus to the next due to changes in nuclear size, the onset of nuclear deformation, and the accompanying changes in the Coulomb energy.

(2) The nuclear ground state cannot be described as

an independent-particle configuration, particularly because such a specification does not generally yield a state of specific angular momentum.

(3) The picture presented further assumes a definite parentage relationship between the ground states of the adjacent nuclei involved in Eqs. (1) and (2). There are some well-known cases of anomalous parentage between adjacent nuclei, as for example ^{48}Ti–^{47}Ti, and ^{11}Be–^{12}Be. However, states of the proper, normal parentage lie relatively near the ground states in both cases; within 160 keV in the case of ^{47}Ti and within 320 keV in the case of ^{11}Be.

D. Mass Relations Based on Charge Symmetry

While the possibility of the uncertainties mentioned above exists in the relationships that we have written down, there are a set of relationships for which these objections do not hold. Consider a mass relation of the form of Eq. (9) but in which the neutron and proton number enter in a symmetric way. For example,

$$M(N,Z)-M(Z,N)+\sum_{i=1}^{N-Z}[M(Z+i-1,Z+i)-M(Z+i,Z+i-1)]=0, \quad (13)$$

where $N-Z\geq 2$. The simplest case of this equation is for $N-Z=2$ which yields

$$M(Z+2,Z)-M(Z,Z+2)+M(Z,Z+1)-M(Z+1,Z)+M(Z+1,Z+2)-M(Z+2,Z+1)=0. \quad (14)$$

In Eqs. (13) and (14) all *nuclear* interactions cancel out under the assumption of charge symmetry. Thus the only forces that remain are electromagnetic forces, and these equations are so written that all p–p Coulomb interactions cancel. Equation (14) can be tested extensively and Table II shows the results obtained in this case. The agreement with experiment is seen to be very good. However, some of the deviations for the odd-Z cases are as large as the deviations encountered for Eqs. (1) and (2). The large deviations in these Z-odd cases [Eq. (14)] arise from the weak binding of the odd proton. For example, in ^{16}F the level is actually unbound so the Thomas–Ehrman shift is appreciable. However, predictions based on Eq. (13) do not constitute positive evidence supporting the validity of Eqs. (1) and (2). Extensive use of Eq. (13) has been made by Kelson and Garvey (1966) to predict the masses of proton-rich nuclei; existing data and relation (1) were used to obtain masses of the neutron-rich nuclei, and then Eq. (13) was employed to predict the mass of the corresponding proton-rich nuclei.

TABLE II. The deviations from zero encountered when using Eq. (14). Column 1 lists the value of Z employed. Column 2 designates the nucleus with $Z+2$ protons and Z neutrons. This nucleus is therefore either odd–odd or even–even in N and Z. The next column gives the value obtained for Eq. (14) in that particular case. The last column lists the proton binding energy of the nucleus in column 2. The experimental masses are taken from Mattauch *et al.* [Nucl. Phys. **67**, 1 (1967)] and Endt and Van der Leun [Nucl. Phys. **A105**, 1 (1967)].

Z	Proton-rich $T=1$ member	Deviation (Mev) Even–Even	Deviation (Mev) Odd–Odd	$B(p)$ (Mev)
3	^{8}B		−0.047±0.006	−0.18
4	^{10}C	−0.003±0.014		−4.05
5	^{12}N		0.230±0.010	−0.37
6	^{14}O	−0.008±0.004		−4.64
7	^{16}F		0.300±0.014	+1.04
8	^{18}Ne	−0.104±0.006		−4.02
9	^{20}Na		−0.100±0.082	−2.27
10	^{22}Mg	−0.034±0.050		−5.53
11	^{24}Al		0.045±0.012	−1.92
12	^{26}Si	−0.007±0.016		−5.50
13	^{28}P		0.056±0.015	−1.99
14	^{30}S	0.013±0.022		−4.39
15	^{32}Cl		−0.030±0.026	−1.59
16	^{34}Ar	0.007±0.030		−4.68
17	^{36}K			−1.66
18	^{38}Ca	0.003±0.030		−4.56
19	^{40}Sc		−0.007±0.018	−0.52
20	^{42}Ti	−0.070±0.018		−3.86

III. RELATION TO NUCLEAR MODELS

A. j·j Coupling in a Single Shell

We shall now discuss models which give rise to binding-energy formulas identical to the form of Eq. (8). As will be clear in Sec. IV, such a formula does not give the best over-all fit to the data. However, any binding-energy formula satisfying (8) also satisfied Eqs. (6) and (7), which work quite well. Such expressions for the binding energy come directly from independent-particle models.

The model to be considered first is that of a single j orbit in which there are n protons and neutrons interacting by two-body, charge-independent interactions (Talmi and Theiberger, 1956). The Coulomb interaction between the protons in the j orbit as well as between these protons and the protons in closed shells is taken to be a perturbation. Thus, the states of the system are characterized by definite isospin T. We further assume the interaction to be diagonal in the

seniority scheme so that ground states can be characterized by the lowest possible values of the seniority v and reduced isospin t (these are $v=0$, $t=0$ for even–even nuclei and $v=1$, $t=\frac{1}{2}$ for odd–even nuclei). Under these assumptions we can use a technique introduced by Racah (1952) to calculate interaction energies in ground states.

The average interaction energies in groups of states in the j^n configuration with the same T and the same seniority quantum numbers are linear combinations of the average interaction energies in the two particle j^2 configuration (deShalit and Talmi, 1963). These average two-body interactions are given by

$$V_0=\langle j^2J=0 \mid V_{12} \mid j^2J=0\rangle \quad \text{for } v=0,\ t=0 \text{ and } T=0,\ J=0;$$

$$\bar{V}_2=\sum_{J>0 \text{ even}}\langle j^2J \mid V_{12} \mid j^2J\rangle / \sum_{J>0 \text{ even}}(2J+1) \quad \text{for } v=2,\ t=1 \text{ and } T=1,\ J>0 \text{ even};$$

$$\bar{V}_1=\sum_{J \text{ odd}}\langle j^2J \mid V_{12} \mid j^2J\rangle / \sum_{J \text{ odd}}(2J+1) \quad \text{for } v=2,\ t=0 \text{ and } T=0,\ J \text{ odd}. \tag{15}$$

Therefore, in order to reproduce the average interactions in all j^n configurations we can use any two-body interaction V_{12}' which has the same values of V_0, $\bar{V}_2$, and $\bar{V}_1$ as the original interaction V_{12}. We take a very simple choice:

$$V_{12}'=x+2y(\mathbf{t}_1\cdot\mathbf{t}_2)+zq_{12}, \tag{16}$$

where q_{12} is the seniority operator or pairing interaction which has eigenvalues 0 for $J>0$ and the eigenvalue $2j+1$ for $J=0$. This operator is simply related to the Casimir operator of the sympletic group $SP(2j+1)$. The interaction (16) has three free parameters in it which will be chosen to give $V_0'=V_0$, $\bar{V}_2'=\bar{V}_2$, and $\bar{V}_1'=\bar{V}_1$. The eigenvalues of (16) in the j^n configuration can be calculated by using the formula for $Q(n, v, t, T)$ and

$$2\sum_{i<k}^{n}\mathbf{t}_i\cdot\mathbf{t}_k=(\sum_{i}^{n}\mathbf{t}_i)^2-\sum_{i}^{n}\mathbf{t}_i^2=T(T+1)-\tfrac{3}{4}n.$$

Thus we obtain for the interaction energies in the j^n configuration due to V_{ik}' the result

$$\tfrac{1}{2}[n(n-1)]x+y[T(T+1)-\tfrac{3}{4}n]+\tfrac{1}{4}z(n-v)[(4j+8-n-v)-T(T+1)+t(t+1)]. \tag{17}$$

These interaction energies do not depend on J or other quantum numbers. Therefore, they are degenerate in the group of states with the same v, t, and T and are directly equal to the average V_{ik}' interaction energies. Still the interaction V_{ik}' can be used for calculating average interaction energies provided x, y, and z are chosen to satisfy

$$V_0'=x+\tfrac{1}{2}y+(2j+1)z=V_0,$$
$$\bar{V}_2'=x+\tfrac{1}{2}y=\bar{V}_2,$$
$$\bar{V}_1'=x-\tfrac{3}{2}y=\bar{V}_1. \tag{18}$$

The expression (17) can then be written as

$$\tfrac{1}{2}[n(n-1)]x+(y-z)[T(T+1)-\tfrac{3}{4}n]+z\{\tfrac{1}{4}(n-v)(4j+4)-\tfrac{1}{4}[n(n-1)]+\tfrac{1}{4}v(v-1)+t(t+1)-\tfrac{3}{4}v\}. \tag{19}$$

This can be further simplified by defining three interaction constants $a=x-\frac{1}{2}z$, $b=y-z$, and $c=2(j+1)z$, which gives the form

$$\tfrac{1}{2}[n(n-1)]a+[T(T+1)-\tfrac{3}{4}n]b+\tfrac{1}{2}(n-v)c+[c/2(j+1)]\{\tfrac{1}{4}[v(v-1)]+t(t+1)-\tfrac{3}{4}v\}. \tag{20}$$

In the case of an even–even nucleus there is only one state with a specific allowed value of T which has lowest seniority $v=0$, $t=0$; this is a state with $J=0$. Similarly, in an odd–even nucleus there is only one state with a specific allowed T with lowest seniority $v=0$, $t=\frac{1}{2}$, i.e., a state with $J=j$. Thus, in these cases the expression (20) gives directly the interaction energy in the ground states. The last term in (20) vanishes in both cases and the interaction energy simplifies to

$$\tfrac{1}{2}[n(n-1)]a+[T(T+1)-\tfrac{3}{4}n]b+\left[\tfrac{1}{2}n\right]c. \tag{21}$$

In (21) there is a quadratic term, a symmetry energy term, and a pairing term $\{\left[\frac{1}{2}n\right]$ is the largest integer not exceeding $\frac{1}{2}n$; it is $\frac{1}{2}n$ for even n and $\frac{1}{2}(n-1)$ for odd $n\}$. To obtain the total binding energy (B.E.) due to the j-nucleons we have to add to (21) the total energy of the closed shells, the kinetic energies of the j-nucleons, and their interaction with the closed shells [n single-nucleon energies (nC)] and the Coulomb interaction (C.E.) between the protons (which will be taken to be independent of the state of the neutrons). Thus, we obtain

$$\text{B.E.}\{j^n,\ T,\ \text{g.s.}\}=\text{const}+nC+\tfrac{1}{2}[n(n-1)]a+[T(T+1)-\tfrac{3}{4}n]b+\left[\tfrac{1}{2}n\right]c+\text{C.E.} \tag{22}$$

Let us now consider even–even and odd–even nuclei with Z protons and N neutrons. If there are A_0 nucleons in closed shells the number of protons in the j orbit is $Z-\frac{1}{2}A_0$ and the number of neutrons is $N-\frac{1}{2}A_0$. We can rewrite (22) in terms of Z and N if we put

$$n=\{Z-\tfrac{1}{2}A_0\}+\{N-\tfrac{1}{2}A_0\}=Z+N-A_0$$

and consider states with maximum symmetry energy

for which $T=\frac{1}{2}(N-Z)$. We obtain (22) in the form

$$\begin{aligned}&\text{const}+ZC+NC-A_0C\\&+\tfrac{1}{2}[Z^2+N^2-(2A_0+1)Z-(2A_0+1)N+A_0(A_0+1)]a\\&+[Z^2+N^2-5Z-N+3A_0]\tfrac{1}{4}b+ZN(a-\tfrac{1}{2}b)\\&+[\![\tfrac{1}{2}Z]\!]c+[\![\tfrac{1}{2}N]\!]c-\tfrac{1}{2}A_0c+\text{C.E.}(Z). \quad (23)\end{aligned}$$

This expression is of the form allowed by Eq. (8) and therefore satisfies both difference equations. Thus, the exact shell-model formula in this seniority coupling is essentially equivalent to the one derived by simple arguments in Sec. II. This simplicity is due to the seniority scheme.

The assumption of good seniority in nuclei with both protons and neutrons outside closed shells is not a very good one. Nevertheless ground states may not be too much affected by deviations from the seniority scheme. If we consider the $f_{7/2}$ shell, we can calculate these effects using, say, the interaction of McCullen, Bayman, and Zamick (1964). It turns out that the exactly calculated ground-state energies are lower by at most 1.3 MeV from the energies calculated by assuming good seniority. The difference equations (1) and (2) do much to compensate for such deviations so that the formulas obtained from the seniority scheme may very well be used to fit the data.

Let us now turn to the more complicated case of odd–odd nuclei. In this case there are, in general, several states with the same seniority quantum numbers (and the same T) so that Eq. (20) gives only their average interaction energy. When we add to (20) the total energy of the closed shells as well as nC and the Coulomb energy, we obtain a formula for the center of mass of the total energies of these states. However, if the expression for the average energy satisfies the difference equations, it is not surprising that they will be satisfied also by the actual binding energies. The deviations from the center of mass are probably not very different for nearby odd–odd nuclei (they are the same if the seniority is a good quantum number). Since in the difference equations (1) and (2) the energies of any odd–odd nuclei appear with opposite signs, these deviations will be largely canceled.

Consider first an odd–odd nucleus with $N>Z$ (or $N<Z$) whose ground state has the minimum isospin $T=\frac{1}{2}(N-Z)$ [or $T=|\frac{1}{2}(N-Z)|$]. There is no state with $J=0$ ($v=0, t=0$) with this value of T since the T of such states must differ by an *even* number from $\frac{1}{2}n$ (deShalit and Talmi, 1963). Therefore, the group with lowest center of mass will have $v=2$ and $t=1$ and will include states with $J=2, 4, \cdots, (2j-1)$. The actual ground states of such odd–odd nuclei in the $f_{7/2}$ shell have indeed even values of J. There is a $v=2$ group with $J=1, 3, \cdots, 2j$ which has the same value of T and symmetry energy, but it has $t=0$ and as a result of (20) *less* pairing energy. The center-of-mass energy of the $v=2$, $t=1$ group has the pairing term

$$\begin{aligned}\tfrac{1}{2}(n-2)c+[c/2(j+1)]=&[\![\tfrac{1}{2}Z]\!]c+[\![\tfrac{1}{2}N]\!]c\\&-\tfrac{1}{2}A_0c+[c/2(j+1)]\end{aligned}$$

and therefore satisfies the difference equations provided $N>Z$ in all odd–odd nuclei appearing. On the other hand, if $N=Z$ the states with the right isospin to be used in the difference equations ($T=0$ and lowest seniority) must have odd values of J and therefore $t=0$ ($v=2$) (deShalit and Talmi, 1963). Consequently, their center-of-mass energy has the pairing term

$$\begin{aligned}\tfrac{1}{2}(n-2)c-[c/2(j+1)]=&[\![\tfrac{1}{2}Z]\!]c+[\![\tfrac{1}{2}N]\!]c\\&-\tfrac{1}{2}A_0c-[c/2(j+1)].\end{aligned}$$

This pairing term is smaller than the corresponding one for the $N\neq Z$ odd–odd nuclei. Thus, the $N=Z$ odd–odd nuclei cannot be admitted into the difference equations as was pointed out in Sec. II.A.

In the basis of the model it is seen that energies of $N=Z$ odd–odd nuclei are given by formulas different from that in the $N\neq Z$ case. However, in contrast with the expectation of simple arguments, $N=Z$ odd–odd nuclei should have *less* interaction energy (in the pairing term) than those with $N\neq Z$. This is in agreement with the actual experimental situation. The fact that the $T=0$ states of $N=Z$ odd–odd nuclei have less binding can be seen from the fact that states with $J=0$ ($v=0$, $t=0$), and consequently with $T=1$, are low lying and actually are the ground states of higher-mass $N=Z$ odd–odd nuclei. These states have less symmetry energy (they have $T=1$ rather than the minimum isospin $T=0$), but they have much more pairing energy.

It should be made clear that using (22) in order to fit binding energies in a single j-shell (e.g., the $f_{7/2}$ shell) does not give excellent results. This is due only in part to the deviations from the seniority scheme. The agreement is much improved if the dependence on Z and N is made out purely quadratic as in (23). Thus, the difference equations (1) and (2) give much better agreement than (22), as they allow a more general dependence on Z and N as well as a slow change of the parameters with A. This change with A also takes care of most energy shifts of ground states due to non-diagonal matrix elements in the seniority scheme.

B. Supermultiplet Theory

It is worthwhile to mention that mass formulas of type (8) can also be obtained from Wigner's supermultiplet theory (Wigner and Feenberg, 1941). [In this theory the interactions considered are either ordinary or space-exchange interactions (Wigner and Majorana forces).] Spin–orbit interactions are ignored

as well as spin- and isospin-dependent central forces. The states of the system are characterized by the permutation symmetry of the spatial part of the wave functions. A measure of the spatial symmetry is given by the eigenvalues of the space-exchange operator $\sum_{i<k} p_{ik}^x$. These can be expressed in terms of the spin–isospin (SU_4) functions which multiply the spatial functions to yield a totally antisymmetric state. These eigenvalues of the space-exchange operator are given by

$$\tfrac{1}{8}[n(16-n)]-\tfrac{1}{2}[P(P+4)+P'(P'+2)+P''^2], \quad (24)$$

where $P\geq P'\geq P''$ are integers or half-integers. P is the maximum value of the isospin T (or the spin S) appearing in the supermultiplet, and P' is the maximum value of the spin S (or the isospin T) appearing with the maximum value of T (or S). The lower the possible values of T and S, the lower the symmetry of the spin–isospin functions and the higher the spatial symmetry.

Consider the l^n configuration with protons and neutrons. In addition to the symmetry of a given state we can consider the amount of pairing in it. The two-nucleon state with lowest seniority is the $L=0$ state. The other states belong to two groups with different seniority quantum numbers; one comprises the states with odd L values (from 1 to $2l-1$) and the other the states with even values of $L>0$ (from 2 to $2l$). In the absence of spin- and isospin-dependent forces the interaction energy in the l^2 configuration depends only on the L of the state. Thus, the average interaction energies in a group of states with the same seniority quantum numbers in the l^n configuration can be expressed in terms of the interaction energy in the $L=0$ state and the average interaction energies in odd L states and in even $L>0$ states. An effective two-body interaction which can be used to calculate average interaction energies can be built as a linear combination of the operators 1, the Majorana space-exchange operator p^x, and the seniority operator. We shall not go into details [which can be found in Racah's paper (1952)], but will discuss the results for binding energies.

The supermultiplet with maximum symmetry in an even–even nucleus with isospin $T=|\frac{1}{2}(N-Z)|$ is $(P, P', P'')=(T, 0, 0)$, and thus the eigenvalue corresponding to Eq. (24) is

$$\tfrac{1}{8}[n(16-n)-4T(T+4)].$$

In an odd–even nucleus the corresponding supermultiplet is $(T, \frac{1}{2}, \pm\frac{1}{2})$ and the eigenvalue of the Majorana operator is

$$\tfrac{1}{8}[n(16-n)-4T(T+4)-6].$$

The pairing term in even–even nuclei is proportional to n, and in odd–even nuclei, to $(n-1)$. Thus, in these cases the binding energy can be expressed in a formula allowed by Eq. (8).

The situation is more complicated for odd–odd nuclei. If $N\neq Z$ ($T>0$), the lowest supermultiplet is $(T, 1, 0)$ and the eigenvalue of (24) is

$$\tfrac{1}{8}[n(16-n)-4T(T+4)-12]. \quad (25)$$

There are no S states ($L=0$) with lowest seniority in this supermultiplet. Since the states with odd L have, on the average, more pairing, the lowest center of mass will be that of the odd L states. It has the pairing term proportional to $n-2+l^{-1}$. Consequently, the binding energies of such odd–odd nuclei could be expressed by the same formula allowed by Eq. (8), as are the even–even and odd–even nuclei. This, however, is not the case for odd–odd nuclei with $N=Z$ ($T=0$). First, the lowest supermultiplet in this case is $(1, 0, 0)$ and the exchange operator has the eigenvalue

$$\tfrac{1}{8}[n(16-n)-20],$$

whereas putting $T=0$ in (25) gives a number which is higher by 1. Thus, odd–odd nuclei with $N=Z$ have *less* symmetry energy than they would have according to Eqs. (25) and (8). The situation is made even more complex when we consider the pairing term. In the supermultiplet $(1, 0, 0)$ there is a state with $L=0$ with the maximum pairing term being proportional to n. Thus, such odd–odd nuclei should have *more* pairing energy than predicted by (8) and they should have S ground states (with $J=0$ or $J=1$). In the supermultiplet model it is not possible to make a general statement about the binding energies of $N=Z$ odd–odd nuclei relative to the predictions of (8). All we can say is that the binding energies of these nuclei cannot, in general, be expressed by (8).

C. $j\cdot j$ Coupling in Different Shells

Next we consider m protons in the j orbit, where the neutrons completely fill the j orbit and n of them are in the next j' orbit. We can still approximate the ground state of the system by taking the proton j^m configuration to be in its lowest seniority state and the j'^n neutrons to be in their lowest seniority state. For even–even and even–odd nuclei this state will be

$$|j^m(J_p=0)j'^n(J_n);J=J_n\rangle \quad \begin{matrix} J=J_n=0 & \text{for } n \text{ even}, \\ J=J_n=j' & \text{for } n \text{ odd}. \end{matrix} \quad (26)$$

The state (26) will be an eigenstate of the shell-model Hamiltonian only if the j-proton–j'-neutron interaction includes scalar products of only *odd* tensors in addition to zero-rank tensors in its expansion. In general, eigenstates will be linear combinations of several states with various values of J_p and J_n.

The expectation value of the interaction between the j protons and the j' neutrons in the state (26) is very simple. Due to $J=0$, the only nonvanishing contribution

comes from the scalar product of zero-rank tensors. This contribution is independent of J and is simply equal to $mn\bar{V}_{jj'}$, where $\bar{V}_{jj'}$ is the average interaction energy defined by

$$\bar{V}_{jj'}=\sum_{J=|j-j'|}^{j+j'}(2J+1)\times\langle j_p j_n' J\mid V\mid j_p j_n' J\rangle/\sum_{J=|j-j'|}^{j+j'}(2J+1). \quad (27)$$

The total binding energy is obtained by considering also the j^m and j'^n energies [obtained from (22) by putting $T=\frac{1}{2}n$, $t=\frac{1}{2}v$] and adding the binding energy of the closed shell nucleus ($m=0$, $n=0$) with Z_0 protons and N_0 neutrons. We obtain for the total energy the expression

$$E_{\text{total}}=\text{const}+mC_j+\tfrac{1}{2}[m(m-1)]\{a_j-\tfrac{1}{2}b_j\}+[\tfrac{1}{2}m]c_j+nC_{j'}+\tfrac{1}{2}[n(n-1)]\{a_{j'}-\tfrac{1}{2}b_{j'}\}+[\tfrac{1}{2}n]c_j+mn\bar{V}_{jj'}+\text{C.E.} \quad (28)$$

We see that the expression (28) with $m=Z-Z_0$, $n=N-N_0$ has the form of Eq. (8) and leads to the difference equations for nuclei having the $j_p{}^m j_n'{}^n$ configurations. We may try to extend the relations also to nuclei with both protons and neutrons in the j orbit. The $j_p{}^m$ contribution has the same Z dependence and the same extension of $f_2(N)$ beyond the filled neutron j orbit. The proton–neutron interactions will cancel in the difference equations only if $\bar{V}_{jj'}=-\frac{1}{2}b_j$ is a good approximation. The difference equations are expected to hold even when crossing a shell (neutrons going into the j' orbit after the neutron j orbit is completely filled). If the NZ term is allowed to vary with A, the change in the proton–neutron interaction when crossing a shell can be conveniently taken into account. In several cases, detailed analysis shows that the mixing of other states, with $J_p\neq 0$ and other values of J_n, with (16) may considerably lower the binding energy. However, such deviations may cancel in the difference equations and thus may be absorbed into the various terms of the expression (8).

If both Z and N are odd, the ground states with lowest seniority of the j^m and j'^n configurations have $J_p=j$, $J_n=j'$. The average j-proton–j'-neutron interaction in all states with J satisfying $|j-j'|\leq J\leq j+j'$ has contributions only from the term with rank-zero tensors. It is equal to $mn\bar{V}_{jj'}$ also in this case. Therefore, the total average binding energy is given by (28). The actual ground-state energy is lower than the average one, but as long as this deviation is approximately the same in all odd–odd nuclei they cancel in the difference equations. Thus, also for such odd–odd nuclei the binding energy is given by an expression of type (8). Under the present conditions we have always $N>Z$ and no special cases should be excluded.

IV. CONSTRUCTION OF A NUCLEAR-MASS TABLE

A. Technique of Construction

Now that we have shown the origin of the mass relations [Eqs. (1) and (2)] and their relation to nuclear models, the problem remains of how best to use them. If we are interested in predicting masses far removed in the value of $N-Z$ from the currently known masses, it is possible to predict them from a variety of different relations based on (1), such as (9). Alternatively one could employ Eq. (2) or some relations derived from it. These different procedures would of course give somewhat different values for the mass in question, and there exists no rational procedure on how to weight each of the separate predictions. The most consistent procedure is to construct a mass table in which Eqs. (1) and/or (2) are exactly satisfied among all the masses. It is readily shown by trying to construct such a table that at least two masses are required for each A to construct a table with Eq. (1), and in general the same number is required if, alternatively, we use Eq. (2). If a mass table is to be constructed requiring both (1) and (2) to be obeyed exactly, then at least only one mass is required in each A apart from some small boundary effects.

If Eq. (1) is used as the basis of a mass table, there would exist no reason to prefer any two well-determined masses with a given A over any other equally well-known pair of the same A. The clearest procedure is again to set up a mass table which exactly obeys Eqs. (1), (2) or both, and then constrain the resulting table to have minimum deviation for all known masses. If the set of masses obey Eq. (1) [or (2)], then the masses have the functional form given by Eqs. (6) or (7).

As an example of the construction of a mass table we will discuss the construction in terms of Eq. (6).

The values of $g_1(N)$, $g_2(Z)$, and $g_3(A)$ are determined by the condition that

$$\delta^2=\sum_{\substack{\text{all known}\\ \text{masses}}}[m(N,Z)-M(N,Z)]^2 \quad (29)$$

be minimized when $m(N,Z)$ is the experimentally measured mass and $M(N,Z)$ is the corresponding generated mass. Here g_1, g_2, and g_3 are point functions whose values on each integer are constrained solely by the minimization of Eq. (29). Each function is treated, therefore, by regarding its value at each point as a separate parameter which is adjusted until a global minimum in (29) is attained. All input masses are given the same weight in Eq. (29) independent of the experimental error. This is because our theory makes no claim to being better than 200 keV, and the more poorly known masses are those farthest from the valley of stability which should be given a larger weight.

This procedure is not unique because the variables N, Z, and A are not independent. Certain terms may be arbitrarily shifted among the three functions without affecting $M(N, Z)$. In greatest generality

$$M(N,Z)=\{g_1(N)+\alpha N+\beta-\gamma\}+\{g_2(Z)+\alpha Z+\beta+\gamma\}+\{g_3(A)-\alpha A-2\beta\}. \quad (30)$$

The arbitrary constants α, β, and γ may be removed by imposing three conditions as the initial values and shapes of the function. If this is not done the least-squares moment matrix is singular, and one is forced to abandon standard inversion methods for determining the optimal parameters.

Proceeding formally, (29) may be rewritten in a linear approximation:

$$\delta^2=\sum_{\substack{\text{all known}\\ \text{nuclides}}}[R(N,Z)-\Delta g_1(N)-\Delta g_2(Z)-\Delta g_3(A)]^2 \quad (31)$$

in which $M(N, Z)$ has been expanded in a first-order Taylor series about some initial approximation:

$$M(N,Z)=g_{10}(N)+g_{20}(Z)+g_{30}(A)+\Delta g_1(N)+\Delta g_2(Z)+\Delta g_3(A)$$

and

$$R(N,Z)=m(N,Z)-[g_{10}(N)+g_{20}(Z)+g_{30}(A)]. \quad (32)$$

If each value of each function is treated as a distinct parameter, Eq. (29) must be at a minimum with respect to variations in each of the linear corrections Δ:

$$\partial\delta^2/\partial(\Delta g_2(Z_i))=-2\sum_{\substack{\text{all known}\\ \text{nuclides}}}[R(N,Z)-\Delta g_1(N)-\Delta g_2(Z)-\Delta g_3(A)]\delta_{Z,Z_i}=0. \quad (33)$$

The Kronecker delta in (33) restricts the summation to nuclei in which $Z=Z_i$. There are equations similar to (33) for each value of Z and for all N and A.

Since Eq. (6) is not applicable to masses with $Z>N$ and nuclei with $A<16$, these are excluded from the sums indicated in Eq. (33). Thus, equations similar to Eq. (33) give a set of 477 equations in the 477 unknown corrections $\Delta g_1(N_{\min})\ldots\Delta g_1(154)$, $\Delta g_2(Z_{\min})\ldots\Delta g_2(100)$, $\Delta g_3(A_{\min})\ldots\Delta g_3(254)$, in which $N_{\min}=10$, $Z_{\min}=6$, and $A_{\min}=16$ are used.

Equation (33) may be rewritten

$$\Delta g_2(Z_i)N_{Z_i}+\sum_{\substack{\text{all known}\\ \text{nuclei}}}[\Delta g_1(N)+\Delta g_3(A)]\delta_{Z,Z_i}=\sum_{\substack{\text{all known}\\ \text{nuclei}}}R(N,Z)\delta_{Z,Z_i}, \quad (34)$$

in which N_{Z_i} is the number of nuclei whose mass is known with $Z=Z_i$. When equations analogous to (34) are written for the other parameters, the set may be written in matrix form:

$$\mathbf{A\Delta}=\mathbf{R}, \quad (35)$$

in which $\mathbf{\Delta}$ is the vector of linear corrections and $\mathbf{R}$ the vector of sums of residuals along lines of constant Z, N, or A. The matrix $\mathbf{A}$ exceeds the storage capacity of any available computer and as noted previously is singular if unrestricted.

The form of $\mathbf{A}$ allows a method of approximate solution for $\mathbf{\Delta}$. The diagonal elements N_{N_i}, N_{Z_i}, and N_{A_i} are large compared to the off-diagonal elements, which are always 0 or 1. To first order, everything except the diagonal of $\mathbf{A}$ is ignored, so that (9) reduces to

$$\Delta g_2(Z_i)\cong[\sum_{\substack{\text{all known}\\ \text{nuclei}}}R(N,Z)\delta_{Z,Z_i}]/N_{Z_i} \quad (36)$$

and similar equations for $\Delta g_1(N_i)$ and $\Delta g_3(A_i)$.

Iteration of this procedure does not yield an absolute minimum because a great deal of coupling has been dropped in going from Eq. (34) to Eq. (36) and because of the shape of the mass surface. Therefore the process represented in Eq. (36) converges extremely slowly, if at all.

The nuclear masses are generally parabolic along lines of constant N, Z, and A. If an essentially planar surface is fit through the masses, each sum of residuals in (11) vanishes. This was observed to be the case in the above calculation. Significant improvement was made by reusing the parabolicity by means of a term similar to $[\frac{1}{2}(N-Z)]^2$, but the parabolicity of the mass surface is A dependent and could not be specified by so simple a term.

To achieve an absolute-minimum squared deviation it was necessary to provide explicitly the coupling between the three functions. This is most easily done by fitting the derivatives of the functions rather than the functions themselves. Defining the derivative of the point functions introduced in Eq. (6), one can write

$$g_2(Z)=g_2(Z_0)+\sum_{Z'=Z_0}^{Z-i}g_2'(Z'). \quad (37)$$

Using expressions such as this for the three functions g_1, g_2, and g_3, Eq. (29) becomes

$$\delta^2=\sum_{\text{all masses}}[m(N,Z)-M_0-\sum_{N'=N_0}^{N-i}g_1'(N')-\sum_{Z'=Z_0}^{Z-1}g_2'(Z')-\sum_{A'=A_0}^{A-1}g_3'(A')]^2, \quad (38)$$

where $M_0=g_1(N_0=N_{\min})+g_2(Z_0=Z_{\min})+g_3(A_0=A_{\min})$. If now a particular $g_1'(N'')$, $g_2'(Z'')$, and $g_3'(A'')$

satisfying $N''+Z''=A''$ are expanded in a Taylor series around some zero-order value, then δ^2 may be written

$$\delta^2=\sum_{\substack{\text{all}\\ \text{masses}}}[R(N,Z)-\Delta g_1'(N'')\sum_{N'=N_0}^{N-1}\delta(N'-N'')-\Delta g_2'(Z'')\sum_{Z'=Z_0}^{Z-1}\delta(Z'-Z'')-\Delta g_3'(A'')\sum_{A'=A_0}^{A-1}\delta(A'-A'')]^2, \quad (39)$$

where

$$R(N,Z)=m(N,Z)-M_0-\sum_{N'=N_0}^{N-1}g_{10}'(N')-\sum_{Z'=Z_0}^{Z-1}g_{20}'(Z')-\sum_{A'=A_0}^{A-1}g_{30}'(A').$$

If a function $\theta(I)$ is introduced and defined by

$$\theta(I)=1 \quad \text{if} \quad I\geq 0$$
$$=0 \quad \text{if} \quad I<0, \quad (40)$$

then Eq. (39) may be simply written as

$$\delta^2=\sum_{\substack{\text{all}\\ \text{masses}}}[R(N,Z)-\Delta g_1'(N'')\theta(N-N'')-\Delta g_2'(Z'')\theta(Z-Z'')-\Delta g_3'(A'')\theta(A-A'')]^2. \quad (41)$$

Since δ^2 should be minimal, its partial derivatives with respect to the increments should vanish. Because of the θ function, differentiation of (41) simply restricts the over-all sum:

$$\partial\delta^2/\partial[\Delta g_1'(N'')]=\sum_{\text{all } Z;N\geq N''}[R(N,Z)-\Delta g_1'(N'')\theta(N-N'')-\Delta g_2'(Z'')\theta(Z-Z'')-\Delta g_3'(A'')\theta(A-A'')]=0. \quad (42)$$

In this way a system of three linear equations in the three increments $\Delta g_1'(N'')$, $\Delta g_2'(Z'')$, and $\Delta g_3'(A'')$ is generated which can then be solved. Fitting M_0 as an independent parameter together with the requirement that $f'(A_{\min})=0$, removes all arbitrariness in the functions. If this procedure is carried out for each N'' and Z'' for which a mass exists, then sufficient coupling between the functions is provided to ensure that the absolute minimum δ^2 will result.

Unfortunately, the latter fitting technique, while assuring that the absolute minimum will be reached, is also more time consuming. It was found that the most efficient approach to minimum δ^2 was achieved by alternating this fitting procedure with the one previously discussed.

B. Discussion of Results

Using the procedures just described, two mass tables were generated; one obeys Eq. (1) exactly (henceforth referred to as I) while the other (II) has a form dictated by Eq. (2). Both constructed tables range over 1272 measured masses (Mattauch, Thiele, and Wapstra, 1965) with $A>16$ and $N\geq Z$. The masses in the tables range from the limits of neutron instability on the neutron-rich side and to proton instability or the $N=Z$ line, whichever is encountered first on the proton-rich side of the valley of beta stability. The average of the absolute deviations from all known masses over the range specified is 0.092 MeV in I and 0.163 MeV in II. Note that for I the value is approximately $6^{-1/2}$ of the value obtained from directly applying Eq. (1) to the known masses. This value of $6^{-1/2}$ is what would be obtained if one was able to distribute the difference that occurs in the difference relations over all six masses in an equation.

The mean-squared deviation is given by

$$\sigma^2=\sum_{\substack{\text{all measured}\\ \text{masses}}}\frac{(M_{\text{exptl}}-M_{\text{pred}})^2}{n},$$

where n is the number of degrees of freedom. The number of parameters required by I is 477, i.e., the values of g_1, g_2, and g_3 for each value of the argument, while II requires 299 values for the f_i. For I, $\sigma_A^2=0.025$ MeV^2 is obtained, while II has $\sigma_B^2=0.073$ MeV^2. No deep physical significance should be attached to the fact that smaller deviations are associated with I, and it most likely results from the distribution of known masses. That is, the range in A over which a given T value occurs is large (e.g., for $T=8$ mass values are known over the range $46\leq A\leq 106$), while for a given A the range of $N-Z$ is never more than 12. Thus if one refers to Eqs. (6) and (7) and notes the distribution of known masses, it is immediately evident that a given $g_3(N+Z)$ applies to at most seven nuclei, all of which have the same A. However, a particular $f_3(N-Z)$ must apply to many more nuclei which, in general, vary in A by a factor of 2 or more. These functions, $g_3(N+Z)$ and $f_3(N-Z)$, carry much of the effect of the neutron–proton residual interaction. This interaction is at least sensitive to the effects of nuclear size so that attempts to characterize it with a single value for a subset of nuclei which differ by a factor of 2 in A will not be successful. A mass table obeying exactly both Eqs. (1) and (2) allows only one parameter [see Eq. (8)] to characterize the neutron–proton residual interaction over the whole of the periodic table. This table, while requiring fewer parameters than either I or II, has a correspondingly worse fit to the data and therefore was not pursued. It is further clear (see Fig. 1) that Eq. (1) allows a more direct extrapolation off the valley of stability than does Eq. (2) and therefore makes more

TABLE III. The values of $g_1(N)$, $g_2(Z)$, and $g_3(N+Z)$ obtained by the procedures described in Sec. IV. The binding energy of a nucleus with $N \geq 10$, $Z \geq 6$, $A \geq 16$, and $N \geq Z$ is obtained from

$$B(N, Z) = 110.7824 + g_1(N) + g_2(Z) + g_3(N+Z).$$

$$B(N, Z) = B_0 + g_1(N) + g_2(Z) + g_3(A)$$

$$B_0 = 110.7824$$

$g_1(N)$

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	−0.951	−0.656	−7.368	−12.431	−22.387	−31.586
−44.532	−56.238	−72.911	−88.257	−109.479	−128.967	−152.395	−174.053
−199.615	−223.783	−251.442	−277.326	−307.974	−337.855	−371.468	−403.784
−439.845	−474.421	−512.737	−549.289	−589.744	−628.382	−670.953	−711.572
−755.974	−798.372	−844.492	−888.498	−935.956	−981.503	−1 030.374	−1 077.294
−1 127.595	−1 175.900	−1 229.114	−1 281.384	−1 335.948	−1 389.581	−1 445.504	−1 500.273
−1 557.875	−1 613.894	−1 672.797	−1 729.978	−1 790.232	−1 848.443	−1 909.778	−1 969.172
−2 031.649	−2 092.414	−2 156.092	−2 217.997	−2 282.791	−2 345.757	−2 411.640	−2 475.657
−2 542.651	−2 607.509	−2 675.325	−2 741.261	−2 809.883	−2 876.724	−2 946.114	−3 013.893
−3 084.059	−3 152.921	−3 225.705	−3 297.316	−3 370.942	−3 443.430	−3 518.183	−3 591.429
−3 666.989	−3 740.569	−3 816.621	−3 891.104	−3 967.907	−4 043.381	−4 121.073	−4 197.469
−4 276.047	−4 353.533	−4 432.969	−4 511.521	−4 592.041	−4 671.578	−4 753.045	−4 833.750
−4 916.222	−4 998.184	−5 081.798	−5 164.758	−5 249.636	−5 333.734	−5 419.782	−5 504.803
−5 591.934	−5 677.903	−5 765.962	−5 852.618	−5 941.626	−6 029.314	−6 119.335	−6 208.116
−6 299.013	−6 388.814	−6 480.466	−6 571.044	−6 663.352	−6 755.201	−6 850.149	−6 944.154
−7 039.822	−7 134.374	−7 230.761	−7 326.155	−7 423.372	−7 519.629	−7 617.695	−7 714.872
−7 813.923	−7 911.932	−8 011.778	−8 110.681	−8 211.247	−8 311.108	−8 412.577	−8 513.262
−8 615.504	−8 717.058	−8 820.020	−8 922.321	−9 026.045	−9 128.991	−9 233.457	−9 337.295
−9 442.723	−9 547.739						

$g_2(Z)$

0.0	0.0	0.0	0.0	0.0	0.0	13.119	26.898
30.158	35.340	32.045	29.973	21.888	15.611	3.396	−8.801
−26.102	−42.933	−64.598	−85.319	−111.560	−136.072	−165.114	−192.564
−224.283	−254.900	−290.115	−324.036	−363.217	−401.862	−444.281	−485.925
−531.434	−575.435	−623.511	−669.886	−720.125	−769.055	−821.644	−873.091
−928.383	−981.991	−1 039.058	−1 094.327	−1 153.286	−1 210.812	−1 271.761	−1 331.196
−1 394.211	−1 455.464	−1 521.784	−1 586.657	−1 654.583	−1 721.187	−1 790.878	−1 859.174
−1 930.566	−2 000.466	−2 073.372	−2 144.855	−2 219.410	−2 292.547	−2 368.642	−2 443.444
−2 521.206	−2 597.585	−2 676.980	−2 755.173	−2 836.175	−2 916.315	−2 999.141	−3 081.399
−3 165.908	−3 249.869	−3 336.353	−3 422.107	−3 510.706	−3 598.119	−3 688.101	−3 777.364
−3 869.272	−3 960.689	−4 055.744	−4 149.818	−4 246.408	−4 341.765	−4 439.756	−4 536.452
−4 635.885	−4 734.487	−4 835.470	−4 935.509	−5 037.933	−5 139.632	−5 243.430	−5 346.528
−5 451.788	−5 556.276	−5 662.994	−5 769.086				

TABLE III (*Continued*)

$B(N, Z) = B_0 + g_1(N) + g_2(Z) + g_3(A)$

$B_0 = 110.7824$

$g_3(A)$							
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	2.160	6.944	14.418	22.227	32.338	44.303	58.118
72.168	88.429	104.732	122.477	141.019	160.902	180.342	201.287
222.994	246.177	269.764	295.037	320.626	347.917	375.645	404.842
434.430	465.432	496.654	529.750	562.615	597.163	631.892	667.751
703.604	740.607	777.524	815.500	853.909	893.366	933.392	974.285
1 015.433	1 057.663	1 100.323	1 143.928	1 187.913	1 232.904	1 278.137	1 324.495
1 370.907	1 418.366	1 466.152	1 514.886	1 563.981	1 613.943	1 664.154	1 715.192
1 766.500	1 819.000	1 871.596	1 925.227	1 978.667	2 033.014	2 087.581	2 143.005
2 198.435	2 254.857	2 311.270	2 368.635	2 425.948	2 484.434	2 543.107	2 602.522
2 662.305	2 722.147	2 782.638	2 843.619	2 904.685	2 966.623	3 028.862	3 091.501
3 154.328	3 217.897	3 281.242	3 345.604	3 410.083	3 475.380	3 540.685	3 606.590
3 672.786	3 739.427	3 806.235	3 873.849	3 941.305	4 009.480	4 077.583	4 146.649
4 215.641	4 285.501	4 355.340	4 425.875	4 496.376	4 567.670	4 638.988	4 711.002
4 783.006	4 855.848	4 928.742	5 002.184	5 075.753	5 149.876	5 224.046	5 298.678
5 373.385	5 448.584	5 523.765	5 599.599	5 675.574	5 751.787	5 828.430	5 905.237
5 982.475	6 059.942	6 137.453	6 215.287	6 293.562	6 372.246	6 451.087	6 530.491
6 609.881	6 689.914	6 769.974	6 850.587	6 931.121	7 012.334	7 093.577	7 175.423
7 257.403	7 339.922	7 422.366	7 505.450	7 588.584	7 672.011	7 755.603	7 839.755
7 923.812	8 008.390	8 093.246	8 178.295	8 263.618	8 349.439	8 435.322	8 521.608
8 608.149	8 694.972	8 782.198	8 869.872	8 957.825	9 045.949	9 134.397	9 222.979
9 311.935	9 401.336	9 491.179	9 581.517	9 672.176	9 763.019	9 854.109	9 945.730
10 037.480	10 129.824	10 222.232	10 314.984	10 408.196	10 501.821	10 595.853	10 690.085
10 784.552	10 879.513	10 974.809	11 070.265	11 166.076	11 262.400	11 358.971	11 455.858
11 552.845	11 650.548	11 748.279	11 846.341	11 944.499	12 043.201	12 142.041	12 240.955
12 340.111	12 439.549	12 539.137	12 638.940	12 738.971	12 839.410	12 939.976	13 041.091
13 142.368	13 244.146	13 345.920	13 448.382	13 550.980	13 654.064	13 757.201	13 860.893
13 964.810	14 069.237	14 173.688	14 278.710	14 383.917	14 489.545	14 595.199	14 701.441
14 807.813	14 914.468	15 021.209	15 128.341	15 235.867	15 343.456	15 451.239	15 559.375
15 667.701	15 776.213	15 884.873	15 993.885	16 103.128	16 212.687	16 322.230	16 432.314
16 542.411	16 652.827	16 763.619	16 874.475	16 985.689			

effective use of existing data. For these reasons the only table on which extensive results are reported is I (shown here as Table VI beginning on p. S22).

The masses generated from the use of Eqs. (1) or (6) are given in Table VI. Listed in this table are the neutron number (N), proton number (Z), $N-Z$, $N+Z$, chemical symbol, the mass excess in megaelectron volts, difference between the predicted mass excess and the experimental value when known, the proton separation energy, the neutron separation energy, the two-proton separation energy, the two-neutron separation energy, the α-particle separation energy, and the total binding energy in megaelectron volts.

Table III gives the set of functions $g_1(N)$, $g_2(N)$, and

TABLE IV. The values of $f_1(N)$, $f_2(Z)$, and $f_3(N-Z)$ obtained by procedures similar to those described in Sec. IV. The binding energy of a nucleus with $N \geq 10$, $Z \geq 6$, $A \geq 16$ and $N \geq Z$ is obtained from

$$B(N, Z) = 114.0130 + f_1(N) + f_2(Z) + f_3(N-Z).$$

$$B(N, Z) = B'_0 + f_1(N) + f_2(Z) + f_3(N-Z)$$

$$B'_0 = 114.0130$$

$f_1(N)$

0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	6.235	15.978	22.651	33.750	41.804	52.523
60.932	72.101	80.698	92.384	100.266	111.527	120.903	133.990
144.529	157.873	168.832	182.886	193.441	206.036	216.446	229.557
240.272	253.708	264.717	278.733	290.080	304.508	316.134	331.024
343.171	358.394	371.086	386.737	399.901	415.915	429.686	446.423
460.771	478.000	491.245	506.351	519.894	535.133	549.012	564.871
578.711	594.864	608.979	625.646	639.945	657.024	671.735	689.155
704.224	721.815	737.217	755.178	770.990	789.430	805.666	824.512
840.943	860.026	876.800	896.090	913.238	932.761	950.308	969.974
987.796	1 007.593	1 024.072	1 042.296	1 059.141	1 077.842	1 094.834	1 113.950
1 131.366	1 151.377	1 169.510	1 189.823	1 208.311	1 228.671	1 247.321	1 267.878
1 286.845	1 307.434	1 326.651	1 347.388	1 366.765	1 387.898	1 407.682	1 428.808
1 448.727	1 469.867	1 490.133	1 511.783	1 532.251	1 554.059	1 574.540	1 596.756
1 617.482	1 640.050	1 661.247	1 684.529	1 706.109	1 729.674	1 751.505	1 775.166
1 797.188	1 820.951	1 843.313	1 867.203	1 889.847	1 913.551	1 934.463	1 956.888
1 978.193	2 001.055	2 022.782	2 046.193	2 068.334	2 092.138	2 114.821	2 139.078
2 162.141	2 186.868	2 210.273	2 235.195	2 259.038	2 284.118	2 308.086	2 333.341
2 357.510	2 382.815	2 407.158	2 432.637	2 457.152	2 482.912	2 507.711	2 533.518
2 558.285	2 584.033						

$f_2(Z)$

0.0	0.0	0.0	0.0	0.0	0.0	11.246	25.061
33.516	47.239	56.394	68.551	77.015	88.777	96.045	105.246
111.876	120.880	126.985	136.212	141.587	149.975	155.045	163.046
167.832	175.340	179.641	186.581	189.646	194.435	196.742	201.158
202.873	207.169	208.362	212.358	213.384	216.782	217.492	220.258
219.964	222.129	221.693	223.856	223.107	224.546	223.344	224.367
222.489	223.230	219.772	218.450	214.796	213.014	208.677	206.260
201.313	198.454	193.111	189.807	184.141	180.560	174.663	271.608
164.172	159.687	152.690	147.410	139.986	133.922	125.821	118.951
110.520	103.438	94.417	86.704	76.892	69.031	59.420	51.193
41.063	31.923	19.550	8.664	−4.230	−15.376	−28.622	−40.142
−53.362	−64.916	−78.383	−90.333	−104.140	−116.755	−131.049	−144.164
−159.011	−172.601	−187.890	−202.128				

$f_3(N-Z)$

0.0	0.242	0.157	−1.393	−3.258	−6.128	−9.182	−13.326
−17.650	−22.894	−28.203	−34.377	−40.614	−47.619	−54.781	−62.540
−70.374	−78.875	−87.627	−96.885	−106.212	−116.220	−126.217	−136.687
−147.226	−158.213	−169.431	−181.021	−192.796	−205.049	−217.428	−230.068
−243.017	−256.423	−270.108	−284.255	−298.683	−313.356	−328.415	−343.782
−359.256	−375.140	−391.063	−407.409	−423.660	−440.616	−457.546	−475.089
−492.813	−510.965	−529.265	−547.796	−566.621	−585.652	−604.938	−624.374
−644.102	−664.230	−684.060					

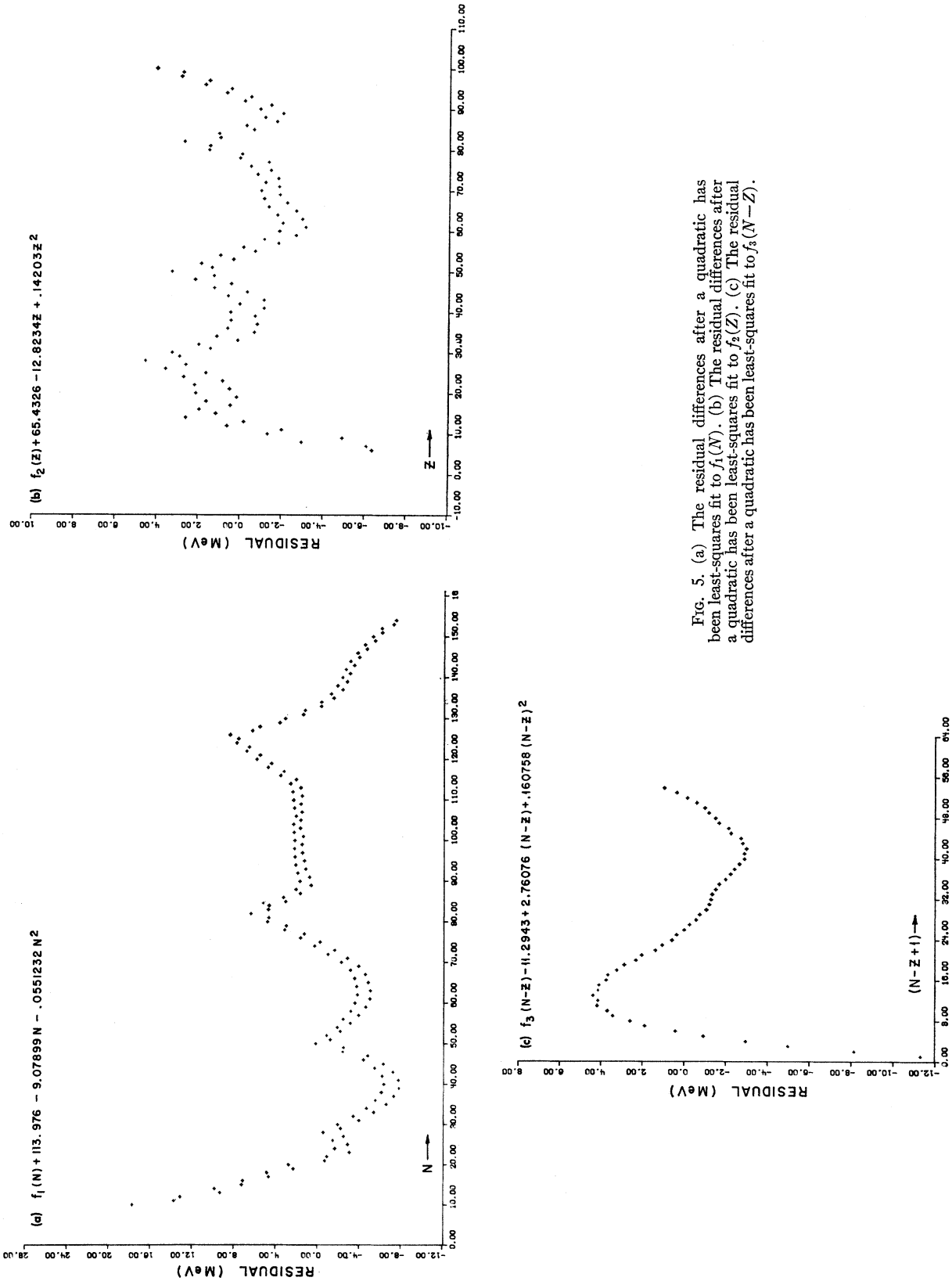

FIG. 5. (a) The residual differences after a quadratic has been least-squares fit to $f_1(N)$. (b) The residual differences after a quadratic has been least-squares fit to $f_2(Z)$. (c) The residual differences after a quadratic has been least-squares fit to $f_3(N-Z)$.

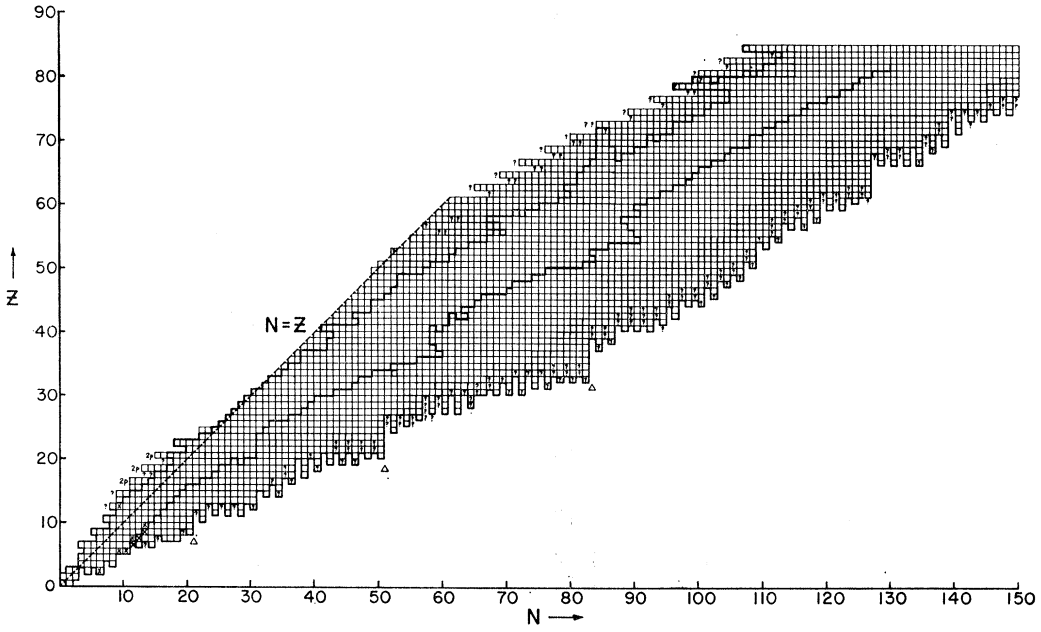

FIG. 6. The predicted limits of stability from the mass table obtained using Eq. (6). The heavy line indicates the range of the presently known nuclei. The more recently discovered light isotopes are marked with a×. In cases where the predicted stability is questionable, a question mark is indicated. For completeness the results of Kelson and Gravey (1966) are used to predict the limits of stability for the $Z>N$ nuclei up through $Z=22$. The limit along the $N=Z$ line up to $Z=50$ is due to the limitations in the theory. Above $Z=50$ the limit shown is determined by proton instability.

$g_3(N+Z)$ which, with a given constant, yield the total binding energy for any nucleus with $N\geq Z$, $10\leq N\leq 154$, $6\leq Z\leq 100$, and $16\leq A\leq 253$. Table IV gives the set of functions $f_1(N)$, $f_2(Z)$, and $f_3(N-Z)$ covering the same region. Figure 5 shows a plot of the residual differences after a least-squares quadratic has been subtracted from each of the functions $f_1(N)$, $f_2(Z)$, and $f_3(N-Z)$. Pairing effects as well as the effects of the magic numbers are clearly in evidence in the resultant residuals from $f_1(N)$ and $f_2(Z)$. The nucleon numbers 28, 50, 82, and 126 are definitely singled out while only slight discontinuities are noted at nucleon numbers 14 and 20. As would be expected, no such structure is observed in the residuals from $f_3(N-Z)$. If the quadradric fits to f_1, f_2, and f_3 are combined, one obtains an equation for the binding energy:

$$B_{II}(N,Z)=59.9117+15.5842Z+6.31823N$$
$$+0.321516NZ-0.303061Z^2-0.105635N^2. \quad (43)$$

This of course is valid for the region $Z>6$, $N>10$ and $N\geq Z$. The degree to which Eq. (43) reproduces masses in the valley of stability can be seen by noting the residuals shown in Fig. 5. The saturation property of nuclei is properly shown by the negative quadratic terms in N and Z. The large difference in the linear terms in N and Z is a result of the fit being on the $N>Z$ side of the valley of stability. The symmetry term in the central potential of a proper finite-shell model well would show similar behavior.

The problem of discussing the relative quality or utility of yet another nuclear-mass table is indeed difficult. Various measures of quality for mass tables have been suggested but none of them are free from reasonable objections. Such a measure has been recently proposed by Kümmel *et al.* (1966). They proposed that the smallest value of the product $g=\Delta M p$ should be considered as the best table, where ΔM is the magnitude of the average deviation between predicted and measured masses and p is the number of parameters. Applied to 873 well-known masses with N, $Z>20$ the Weizsäcker–Bethe liquid-drop model yields $\Delta M=2.75$ MeV, with $p=5$ for $g=13.7$. The mass formula put forward by Kümmel *et al.* has $\Delta M=0.282$ MeV, $p=45$; hence $g=12.7$. Our procedure applied to all masses with Z, $N>20$ yields $\Delta M=0.089$ MeV, $p=441$ for $g=39.2$. However, this criterion is clearly at variance with a least-squares or chi-square test, both of which sum the *squares* of the deviations (putting much larger emphasis on obtaining small deviations) and divide by the numbers of degree of freedom. Where a large number of masses is involved these tests for goodness of fit put no real premium on having a smaller number of parameters. Using a least-squares criterion, our table compares very well with authors listing this value. For example,

TABLE V. The α-decay energies of extremely neutron-deficient isotopes. The first column gives the parent nucleus. The next five columns list the energies predicted by the work of the author listed at the top of each column. The seventh column gives the result obtained from the mass table presented here. The last column gives the experimental values as reported on the ninth edition of the Knolls Atomic Power Laboratory Chart of the Nuclides.

Nucl.	Seeger	Cameron (exptl)	Cameron (conv)	Myers and Swiaticki	Zeldes	T.W.	Exptl
^{213}Th							
^{209}Ac	7.36	6.52	6.95	7.46	7.36	7.61	7.73
^{206}Ra	7.30	6.58	7.31	7.52	7.16	7.02	7.41
^{203}Fr	7.44	7.42	8.00	7.43	7.02	7.05	7.27
^{200}Rn	7.28	7.90	8.86	7.37	6.98	7.75	7.02
^{196}At	7.39	9.24	9.97	7.41	...	8.92	7.20
^{193}Po	7.16	8.97	9.81	7.54	...	8.91	7.15
^{190}Bi	7.20	7.14	8.19	6.66	...	8.35	6.60
^{177}Hg	6.40	4.55	5.78	6.09	6.52	7.64	6.25
^{177}Pt	6.50	4.94	5.96	6.14	...	7.79	6.35
^{157}Hf	5.25	7.27	7.78	6.26	6.08	7.43	5.83
^{155}Lu	5.08	7.45	7.88	6.20	...	6.86	5.78
^{156}Lu	4.83	6.85	7.08	5.94	5.71	6.47	5.68
^{154}Yb	4.89	6.91	7.30	5.90	5.39	6.24	5.68
^{153}Tm	4.60	6.46	6.75	5.57	5.08	5.60	5.25
^{152}Er	4.37	6.37	6.28	5.25	4.81	5.44	5.06
^{107}Te	4.21	3.91	4.41	4.34	3.58	3.50	3.41
^{108}Te	3.92	3.38	4.13	4.06	3.22	2.92	3.20

Seeger and Perisho (unpublished) give $\sigma=0.753$ MeV, while the table presented here has $\sigma=0.158$ MeV.

Interesting observations can be made from and on the masses given in Table VI by comparing them to other predictions and experimental results.

First, with regard to predicting the limits of neutron stability in light nuclei, the present procedure seems to give the best results. The table of Myers and Swiatecki (1966; unpublished) extends the "neutron dip line" out too far, as they predict particle stability for ^{10}He, ^{14}Be, and ^{17}B. These nuclei are currently believed to be unstable on the basis of experiments which have searched for them (Poskanzer, Cosper, Hyde, and Cerny, private communication; Thomas, Risbeck, Lynch, and Garvey, private communication) and produced negative results. Most authors constructing mass tables do not include $Z\leq 10$ so that no direct comparison with their results in this region are possible. Some earlier Russian work (Zeldovich, 1960; Goldanskii, 1960) on the particle stability of light nuclei gives results which are in agreement with observation, but the procedure used is not very clear. There are also some significant differences with our results which can only be resolved by experiment. Figure 6 shows a plot illustrating our predicted limits of proton and neutron stability.

While mass measurements far from the valley of stability are not yet available, there are some well-known α-decay energies associated with these nuclei. Extremely neutron-deficient nuclei, such as ^{193}Po, ^{177}Au, ^{173}Pt, ^{155}Lu, and ^{107}Te, have been identified via their α decay. The energies of these α-particle decays are difficult to predict and offer a real challenge to any mass table claiming to have relevance beyond the range of known nuclear masses. Table V gives the experimentally determined Q values for these α decays along with the predictions of the most recent nuclear tables (Myers and Swiatecki, 1966; unpublished; Seeger and Perisho, unpublished; Cameron and Elkin, 1965; unpublished; Zeldes, Grill, and Simievis, 1967). In general the agreement with experiment is not too bad except for the values of Cameron and Elkin. The values obtained by Zeldes *et al.* seem to work the best, at least for

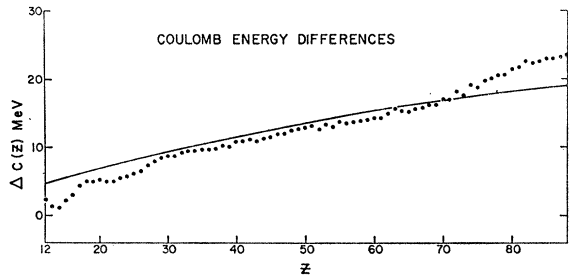

FIG. 7. The points represent the Coulomb energy differences obtained using Eq. (48). The line shown is an empirical fit to measured Coulomb energy differences [J. D. Anderson *et al.*, Phys. Rev. **138**, B615 (1965)].

the cases he has listed in his tabulation. However, it must be remarked that his approach, which is based on a generalization of an independent-particle model, has a very serious defect in that it contains strong charge-dependent nuclear terms. They are of the form (αNZ^2) and (βZ^2N), where the constants α and β are not equal. This approach leads to very serious trouble in the light nuclei. For example, the difference between the mass defects of ^{20}Mg and its charge-symmetric isobar ^{20}O is given by Zeldes *et al.* as 28.4 MeV, while from known Coulomb energy differences it is expected to be 13.6 MeV [see Eq. (13)]. This difficulty persists up through the Ca isotopes, as the proton binding energies predicted by Zeldes are much less than those given by Kelson and Garvey (1966). We have severe difficulty with the present table in the region of $Z>82$ with $N<126$. It is not clear that all the masses in this region are correctly measured. If these masses are correctly measured, then this would indicate that the neutron–proton interaction in this region must be a very rapidly changing function of $N-Z$ for fixed A.

The question may be raised whether Coulomb energy differences can be extracted from these tables. In the construction of the functions g_i and f_i, no $N<Z$ nuclei were used, so that no isobaric multiplets are used. Nevertheless, with some drastic assumptions, we may try to extract this interesting number. A Coulomb energy difference is defined as the difference in binding energy of two pairs of an isobaric multiplet differing by 1 in Z. Thus, denoting the Coulomb energy difference as $\Delta C(Z, A)$, we have

$$\Delta C(Z, A) \equiv B(\alpha, Z, N) - B(\alpha, Z-1, N+1). \quad (44)$$

The symbol α stands for all the quantum numbers, apart from $N-Z$, necessary to specify the state. Coulomb energy differences are observed to be relatively independent of the details (α) of the wave function for an isobaric system. The Coulomb energy difference is, of course, due principally to the Coulomb interaction energy of the Zth proton with the $Z-1$ other protons.

The function $g_2(Z)$ (given in Table III) represents the total binding energy to within a constant plus linear term [see Eq. (30)] for Z protons in nuclear matter, as encountered in nature. We may write this function as follows:

$$g_2(Z) = g_2^n(Z) + g_2^c(Z) + \alpha Z + \epsilon, \quad (45)$$

where $g_2^n(Z)$ is the binding energy due to nuclear interactions for the Z protons and $g_2^c(Z)$ is the electromagnetic binding energy. Similarly the function $g_1(N)$ may be written

$$g_1(N) = g_1^n(N) + \alpha N + \epsilon'. \quad (46)$$

Now if it is assumed that

$$g_1^n(N) = g_2^n(Z) \quad \text{for} \quad N=Z, \quad (47)$$

then the Coulomb energy difference can be expressed as

$$\Delta C(Z) = g_2^c(Z) - g_2^c(Z-1)$$
$$= g_2(Z) - g_2(Z-1) - [g_1(Z) - g_1(Z-1)]. \quad (48)$$

The assumptions made in writing Eq. (47) are drastic ones indeed and are correct only in some zeroth-order sense. The functions $g_2(Z)$ and $g_1(Z)$ are in general determined from different regions of the periodic table. For example, for $Z=50$, $g_2(50)$ is obtained in the region $A\simeq 116$, while $g_1(50)$ is from $A\simeq 88$. In addition to A-dependent effects on the nuclear interactions, differences also occur due to symmetry energy differences. However, many of these effects are reduced in importance by taking differences as in Eq. (48). Figure 7 shows the Coulomb energies obtained using Eq. (48). They are compared to an empirical curve obtained by Anderson *et al.* (1965) which reproduces the observed Coulomb energy differences to within 200 keV. Except for the lightest and heaviest nuclei, the Coulomb energies are in approximate agreement with observation. It must be stressed again that this result is obtained without using any isobaric multiplets and, of course, no knowledge of the nuclear radius is used. The only input is the masses of nuclei with $N\geq Z$.

V. CONCLUSIONS

The points most in favor of the present approach are its relative model independence and the fact that the resulting mass tables are consequences of a simple difference equation observed to hold for all masses with $N>Z$. The approach is different from previous work in the calculation of masses, as it is rooted in the notion of an independent-particle model which represents the most firmly established and best understood class of nuclear models. However, our results are quite independent of the details of any particular version of this model.

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TABLE VI. A nuclear mass table covering nuclei with $N \geq 10$, $Z \geq 6$ and $A \geq 16$. The entries into this table reading from left to right are (1) neutron number (N), (2) proton number (Z), (3) $N-Z$, (4) $N+Z$, (5) the chemical symbol, (6) the mass excess ($^{12}C \equiv 0$), (7) difference between the listed mass and the experimental value when the latter is known, (8) the proton separation energy, (9) the neutron separation energy, (10) the two-proton separation energy, (11) the two-neutron separation energy, (12) the α-particle separation energy, and (13) the total binding energy. All energies are given in megaelectron volts.

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
10	6	4	16	C	13.67	-0.03	0.	0.	0.	0.	0.	110.78
10	7	3	17	N	7.84	-0.04	-13.12	0.	0.	0.	0.	123.90
12	6	6	18	C	28.31		0.	-2.45	0.	-1.50	0.	112.29
11	7	4		N	14.70		-15.28	-1.21	0.	0.	0.	125.11
10	8	2		O	-0.81	-0.03	-15.94	0.	-29.06	0.	0.	139.84
12	7	5	19	N	17.69		-17.90	-5.08	0.	-6.29	0.	130.19
11	8	3		O	3.42	0.09	-18.56	-3.83	-33.84	0.	0.	143.67
10	9	1		F	-1.57	-0.08	-8.04	0.	-23.98	0.	0.	147.88
14	6	8	20	C	43.97		0.	-2.41	0.	-0.48	0.	112.77
13	7	6		N	25.00		-20.59	-0.76	0.	-5.84	0.	130.95
12	8	4		O	3.73	-0.07	-21.25	-7.77	-39.16	-11.60	-12.36	151.44
11	9	2		F	-0.02	-0.01	-10.73	-6.52	-29.30	0.	0.	154.41
10	10	0		NE	-6.94	0.11	-12.66	0.	-20.70	0.	0.	160.54
14	7	7	21	N	30.33		-20.93	-2.75	0.	-3.51	0.	133.70
13	8	5		O	10.70		-21.59	-1.10	-42.18	-8.87	-14.41	152.54
12	9	3		F	-0.05	-0.01	-11.07	-8.10	-32.32	-14.63	-10.31	162.51
11	10	1		NE	-5.72	0.01	-12.99	-6.86	-23.73	0.	0.	167.40
16	6	10	22	C	61.34		0.	-0.91	0.	1.24	0.	111.53
15	7	8		N	38.24		-23.23	-0.16	0.	-2.90	0.	133.85
14	8	6		O	13.73		-23.89	-5.05	-44.82	-6.14	-17.00	157.59
13	9	4		F	4.62	0.12	-13.37	-3.40	-34.96	-11.50	-12.50	165.91
12	10	2		NE	-8.06	-0.03	-15.29	-10.41	-26.36	-17.26	-9.67	177.80
16	7	9	23	N	43.55		-25.08	-2.77	0.	-2.92	0.	136.62
15	8	7		O	19.79		-25.74	-2.01	-48.97	-7.06	-20.94	159.60
14	9	5		F	5.79		-15.23	-6.90	-39.12	-10.30	-14.33	172.81
13	10	3		NE	-5.24	-0.09	-17.15	-5.25	-30.52	-15.66	-11.09	183.06
12	11	1		NA	-9.44	0.09	-8.67	0.	-23.96	0.	-10.29	186.47
18	6	12	24	C	76.36		0.	-2.11	0.	-1.13	0.	112.66
17	7	10		N	50.75		-26.93	-0.87	0.	-3.64	0.	137.49
16	8	8		O	23.24		-27.59	-4.62	-52.68	-6.63	-23.15	164.21
15	9	6		F	10.00		-17.08	-3.86	-42.82	-10.76	-17.43	176.67
14	10	4		NE	-5.92	0.03	-19.00	-8.75	-34.22	-14.01	-12.07	191.81
13	11	2		NA	-8.47	-0.05	-10.52	-7.10	-27.67	0.	-10.87	193.58
12	12	0		MG	-13.89	0.04	-11.74	0.	-20.41	0.	-9.38	198.22
18	7	11	25	N	56.48		-27.17	-2.34	0.	-3.21	0.	139.83
17	8	9		O	30.21		-27.83	-1.10	-54.76	-5.72	-26.40	165.32
16	9	7		F	13.22		-17.31	-4.85	-44.90	-8.71	-19.53	181.52
15	10	5		NE	-1.94		-19.23	-4.09	-36.31	-12.85	-15.07	195.90
14	11	3		NA	-9.39	-0.03	-10.75	-8.99	-29.75	-16.09	-11.76	202.56
13	12	1		MG	-13.16	0.03	-11.98	-7.34	-22.50	0.	-9.86	205.56
20	6	14	26	C	94.21		0.	-0.91	0.	1.71	0.	110.95
18	8	10		O	33.73		-30.04	-4.56	-57.21	-5.66	-30.04	169.87
17	9	8		F	17.98		-19.52	-3.32	-47.35	-8.17	-22.69	184.84
16	10	6		NE	-0.93		-21.44	-7.06	-38.75	-11.16	-17.08	202.97
15	11	4		NA	-7.62	0.07	-12.97	-6.31	-32.20	-15.29	-14.66	208.87
14	12	2		MG	-16.29	-0.07	-14.19	-11.20	-24.94	-18.54	-10.65	216.75
20	7	13	27	N	72.08		-29.42	-0.96	0.	-0.54	0.	140.38
18	9	9		F	21.45		-19.56	-4.60	-49.60	-7.91	-24.52	189.44
17	10	7		NE	3.78		-21.48	-3.36	-41.01	-10.42	-18.43	206.32
16	11	5		NA	-6.65		-13.01	-7.10	-34.45	-13.41	-14.86	215.97
15	12	3		MG	-14.56	0.02	-14.23	-6.35	-27.20	-17.55	-11.75	223.10
14	13	1		AL	-17.21	-0.02	-8.22	0.	-22.41	0.	-10.20	224.97
20	8	12	28	O	47.84		-31.52	-2.40	-60.95	-2.03	-30.94	171.90
19	9	10		F	28.45		-21.01	-1.07	-51.09	-5.67	-24.72	190.51
18	10	8		NE	5.81		-22.93	-6.04	-42.49	-9.40	-19.85	212.36
17	11	6		NA	-3.38		-14.45	-4.80	-35.93	-11.90	-15.80	220.77
16	12	4		MG	-15.03	-0.01	-15.67	-8.55	-28.68	-14.89	-11.54	231.65
15	13	2		AL	-16.93	-0.08	-9.66	-7.79	-23.89	0.	-10.89	232.76
14	14	0		SI	-21.39	0.10	-11.47	0.	-19.69	0.	-9.93	236.44

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
20	9	11	29	F	33.33		-21.80	-3.20	-53.33	-4.27	-25.57	193.70
19	10	9		NE	12.02		-23.72	-1.87	-44.73	-7.91	-20.62	214.23
18	11	7		NA	-2.14		-15.25	-6.84	-38.17	-11.64	-17.79	227.61
17	12	5		MG	-12.56		-16.47	-5.60	-30.92	-14.14	-13.04	237.24
16	13	3		AL	-18.20	0.01	-10.46	-9.34	-26.13	-17.13	-11.24	242.10
15	14	1		SI	-21.91	-0.01	-12.26	-8.59	-21.92	0.	-11.17	245.03
22	8	14	30	O	66.27		-33.66	-0.39	-65.32	2.29	-30.36	169.61
20	10	10		NE	15.55		-25.06	-4.54	-46.87	-6.41	-20.60	218.77
19	11	8		NA	2.72		-16.59	-3.21	-40.31	-10.05	-17.68	230.82
18	12	6		MG	-12.67		-17.81	-8.18	-33.06	-13.77	-14.16	245.42
17	13	4		AL	-17.07	0.08	-11.80	-6.94	-28.27	-16.28	-11.87	249.04
16	14	2		SI	-24.52	-0.08	-13.61	-10.68	-24.06	-19.27	-10.66	255.71
20	11	9	31	NA	6.70		-16.15	-4.09	-41.21	-7.30	-17.18	234.91
19	12	7		MG	-7.36		-17.37	-2.77	-33.96	-10.95	-13.57	248.19
18	13	5		AL	-16.73		-11.36	-7.74	-29.17	-14.67	-12.51	256.78
17	14	3		SI	-22.94	0.02	-13.16	-6.49	-24.96	-17.18	-10.81	262.20
16	15	1		P	-24.46	-0.02	-7.23	0.	-20.83	0.	-9.67	262.93
22	10	12	32	NE	32.02		-26.13	-1.46	-48.83	0.32	-18.25	218.44
20	12	8		MG	-4.89		-18.87	-5.60	-35.02	-8.37	-13.13	253.78
19	13	6		AL	-12.93		-12.86	-4.27	-30.23	-12.01	-11.98	261.05
18	14	4		SI	-24.11	-0.02	-14.67	-9.24	-26.02	-15.73	-11.50	271.44
17	15	2		P	-24.38	-0.08	-8.73	-8.00	-21.89	0.	-9.88	270.93
16	16	0		S	-25.91	0.10	-8.75	0.	-15.97	0.	-6.95	271.68
24	9	15	33	F	69.43		-24.97	-0.05	-59.69	2.43	-25.63	185.88
22	11	11		NA	20.90		-18.41	-2.22	-44.54	-1.94	-14.86	236.85
21	12	9		MG	2.70		-19.63	-0.49	-37.28	-6.08	-11.74	254.27
20	13	7		AL	-11.22		-13.62	-6.36	-32.49	-10.63	-11.50	267.41
19	14	5		SI	-21.07		-15.43	-5.03	-28.29	-14.27	-10.94	276.48
18	15	3		P	-26.31	0.02	-9.49	-10.00	-24.16	-18.00	-10.54	280.93
17	16	1		S	-26.60	-0.02	-9.51	-8.76	-18.24	0.	-7.12	280.44
24	10	14	34	NE	48.36		-28.37	-1.53	-53.33	0.20	-20.34	218.25
22	12	10		MG	7.07		-21.11	-3.70	-39.52	-4.18	-10.90	257.97
21	13	8		AL	-5.11		-15.10	-1.96	-34.73	-8.32	-10.25	269.37
20	14	6		SI	-20.84		-16.91	-7.84	-30.53	-12.87	-10.60	284.31
19	15	4		P	-24.75	0.08	-10.97	-6.51	-26.40	-16.51	-10.11	287.44
18	16	2		S	-30.01	-0.08	-10.99	-11.48	-20.48	-20.24	-7.92	291.92
24	11	13	35	NA	35.36		-20.29	-1.93	-48.66	-1.68	-17.93	238.54
23	12	11		MG	14.99		-21.52	-0.16	-41.40	-3.85	-12.84	258.12
22	13	9		AL	-1.14		-15.50	-4.10	-36.61	-6.06	-10.26	273.47
21	14	7		SI	-15.13		-17.31	-2.37	-32.41	-10.20	-10.20	286.68
20	15	5		P	-24.92		-11.37	-8.24	-28.28	-14.75	-10.61	295.69
19	16	3		S	-28.85	-0.01	-11.39	-6.91	-22.36	-18.39	-8.34	298.83
18	17	1		CL	-29.01	0.01	-6.29	0.	-17.27	0.	-6.98	298.21
26	10	16	36	NE	65.37		-30.45	-1.10	-57.30	0.87	-24.17	217.38
24	12	12		MG	19.44		-23.20	-3.61	-43.49	-3.77	-15.00	261.74
23	13	10		AL	5.09		-17.19	-1.84	-38.70	-5.94	-12.38	275.31
22	14	8		SI	-12.85		-19.00	-5.79	-34.50	-8.15	-10.38	292.46
21	15	6		P	-20.90		-13.06	-4.05	-30.37	-12.29	-10.40	299.74
20	16	4		S	-30.71	-0.05	-13.08	-9.93	-24.45	-16.84	-9.02	308.76
19	17	2		CL	-29.54	-0.02	-7.97	-8.60	-19.36	0.	-7.58	306.81
18	18	0		A	-30.16	0.07	-8.44	0.	-14.73	0.	-6.67	306.65
26	11	15	37	NA	50.37		-22.29	-1.42	-52.75	-1.13	-21.49	239.67
25	12	13		MG	27.49		-23.52	-0.03	-45.49	-3.64	-16.75	261.77
24	13	11		AL	9.23		-17.50	-3.93	-40.70	-5.77	-14.09	279.24
23	14	9		SI	-6.94		-19.31	-2.16	-36.50	-7.95	-12.06	294.62
22	15	7		P	-18.93		-13.37	-6.10	-32.37	-10.15	-10.13	305.84
21	16	5		S	-27.00	-0.00	-13.39	-4.37	-26.45	-14.29	-8.36	313.13
20	17	3		CL	-31.71	0.06	-8.29	-10.24	-21.36	-18.84	-7.82	317.05
19	18	1		A	-31.01	-0.05	-8.76	-8.91	-16.73	0.	-6.83	315.56
28	10	18	38	NE	82.18		-32.47	-1.41	-61.32	0.66	-28.34	216.71
26	12	14		MG	32.44		-25.22	-3.12	-47.51	-3.15	-18.35	264.89
25	13	12		AL	15.57		-19.21	-1.73	-42.72	-5.66	-16.07	280.97
24	14	10		SI	-4.50		-21.01	-5.63	-38.52	-7.79	-14.00	300.26
23	15	8		P	-14.72		-15.08	-3.86	-34.39	-9.96	-12.04	309.70
22	16	6		S	-26.74	0.06	-15.09	-7.80	-28.47	-12.17	-8.32	320.93
21	17	4		CL	-29.71	0.10	-9.99	-6.07	-23.38	-16.31	-7.38	323.12
20	18	2		A	-34.88	-0.16	-10.46	-11.95	-18.75	-20.86	-7.29	327.51

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
28	11	17	39	NA	65.03		-24.43	-1.84	-56.91	-1.48	-25.93	241.15
27	12	15		MG	40.44		-25.66	-0.07	-49.65	-3.19	-20.39	264.96
26	13	13		AL	20.08		-19.64	-3.56	-44.86	-5.29	-17.70	284.53
25	14	11		SI	1.41		-21.45	-2.17	-40.66	-7.80	-16.00	302.42
24	15	9		P	-12.72		-15.51	-6.07	-36.53	-9.93	-14.01	315.77
23	16	7		S	-22.96		-15.53	-4.30	-30.61	-12.10	-10.26	325.23
22	17	5		CL	-29.87	-0.07	-10.43	-8.24	-25.52	-14.31	-7.38	331.36
21	18	3		A	-33.31	-0.08	-10.90	-6.51	-20.89	-18.45	-6.89	334.02
20	19	1		K	-33.65	0.15	-6.06	0.	-16.52	0.	-7.07	333.57
28	12	16	40	MG	45.20		-27.12	-3.31	-51.56	-3.38	-22.60	268.27
27	13	14		AL	26.62		-21.11	-1.54	-46.77	-5.10	-19.52	286.07
26	14	12		SI	4.45		-22.92	-5.03	-42.56	-7.19	-17.42	307.45
25	15	10		P	-8.28		-16.98	-3.63	-38.43	-9.71	-15.80	319.41
24	16	8		S	-22.43		-17.00	-7.54	-32.51	-11.84	-12.01	332.77
23	17	6		CL	-27.57	-0.07	-11.90	-5.77	-27.43	-14.01	-9.09	337.13
22	18	4		A	-34.95	0.09	-12.37	-9.71	-22.79	-16.21	-6.67	343.72
21	19	2		K	-33.56	-0.02	-7.53	-7.97	-18.43	0.	-6.44	341.55
20	20	0		CA	-34.84	0.01	-8.48	0.	-14.54	0.	-7.10	342.05
28	13	15	41	AL	30.98		-21.50	-3.70	-48.63	-5.24	-21.81	289.77
27	14	13		SI	10.59		-23.31	-1.93	-44.42	-6.96	-19.32	309.38
26	15	11		P	-5.63		-17.37	-5.42	-40.29	-9.05	-17.29	324.83
25	16	9		S	-18.39		-17.39	-4.03	-34.37	-11.56	-13.88	336.80
24	17	7		CL	-27.43		-12.29	-7.93	-29.29	-13.70	-10.92	345.06
23	18	5		A	-33.04	0.03	-12.76	-6.16	-24.65	-15.87	-8.46	349.88
22	19	3		K	-35.58	-0.03	-7.92	-10.10	-20.29	-18.07	-6.30	351.65
21	20	1		CA	-35.13	0.01	-8.87	-8.37	-16.40	0.	-6.55	350.41
30	12	18	42	MG	61.28		-28.93	-1.12	-55.22	-0.06	-23.32	268.33
29	13	16		AL	38.70		-22.92	-0.35	-50.43	-4.06	-22.53	290.13
28	14	14		SI	13.55		-24.73	-5.12	-46.23	-7.05	-21.31	314.50
27	15	12		P	-0.91		-18.79	-3.34	-42.10	-8.76	-18.90	328.17
26	16	10		S	-17.15		-18.80	-6.83	-36.18	-10.86	-15.08	343.63
25	17	8		CL	-24.80		-13.70	-5.44	-31.09	-13.37	-12.50	350.50
24	18	6		A	-34.31	0.11	-14.17	-9.34	-26.46	-15.50	-10.00	359.23
23	19	4		K	-35.09	-0.07	-9.34	-7.57	-22.09	-17.67	-7.81	359.22
22	20	2		CA	-38.58	-0.04	-10.28	-11.51	-18.20	-19.88	-6.12	361.93
30	13	17	43	AL	45.43		-23.14	-1.34	-52.07	-1.69	-22.03	291.47
29	14	15		SI	21.04		-24.94	-0.57	-47.86	-5.69	-21.82	315.07
28	15	13		P	1.83		-19.01	-5.34	-43.73	-8.68	-20.68	333.51
27	16	11		S	-12.64		-19.02	-3.56	-37.81	-10.40	-16.47	347.19
26	17	9		CL	-23.78		-13.92	-7.05	-32.73	-12.49	-13.48	357.55
25	18	7		A	-31.90		-14.39	-5.66	-28.09	-15.00	-11.36	364.89
24	19	5		K	-36.58	-0.00	-9.56	-9.56	-23.73	-17.14	-9.13	368.78
23	20	3		CA	-38.30	0.10	-10.50	-7.79	-19.84	-19.31	-7.41	369.72
22	21	1		SC	-36.27	-0.10	-4.98	0.	-15.26	0.	-5.04	366.91
32	12	20	44	MG	79.03		-31.02	-0.78	-58.95	1.61	-25.32	266.72
30	14	16		SI	25.90		-26.82	-3.22	-49.96	-3.79	-21.72	318.29
29	15	14		P	7.45		-20.88	-2.45	-45.83	-7.79	-21.59	335.95
28	16	12		S	-11.78		-20.90	-7.21	-39.91	-10.78	-18.66	354.41
27	17	10		CL	-21.15		-15.80	-5.44	-34.82	-12.49	-15.29	362.99
26	18	8		A	-32.76		-16.27	-8.93	-30.19	-14.59	-12.75	373.82
25	19	6		K	-36.04	0.17	-11.43	-7.53	-25.82	-17.10	-10.90	376.32
24	20	4		CA	-41.67	-0.21	-12.38	-11.44	-21.93	-19.23	-9.14	381.16
23	21	2		SC	-37.87	-0.05	-6.86	-9.67	-17.36	0.	-6.73	376.58
22	22	0		TI	-37.56	0.09	-8.58	0.	-13.57	0.	-5.15	375.49
32	13	19	45	AL	61.54		-24.78	-0.55	-55.81	-0.03	-23.80	291.50
30	15	15		P	12.54		-20.65	-2.98	-47.47	-5.43	-20.87	338.94
29	16	13		S	-5.93		-20.67	-2.22	-41.55	-9.43	-18.95	356.62
28	17	11		CL	-20.06		-15.56	-6.98	-36.46	-12.42	-16.85	369.97
27	18	9		A	-29.99		-16.03	-5.21	-31.83	-14.13	-13.93	379.02
26	19	7		K	-36.67	-0.04	-11.20	-8.70	-27.47	-16.23	-11.66	385.02
25	20	5		CA	-40.90	-0.09	-12.14	-7.30	-23.58	-18.74	-10.28	388.46
24	21	3		SC	-41.00	0.06	-6.62	-11.21	-19.00	-20.88	-7.84	387.78
23	22	1		TI	-38.93	0.07	-8.35	-9.44	-15.21	0.	-6.22	384.93

TABLE VI (*Continued*)

	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
32	14	18	46	SI	40.56		-28.27	-2.23	-53.05	-1.48	-23.14	319.77
31	15	16		P	19.68		-22.33	-0.94	-48.92	-3.92	-21.45	339.87
30	16	14		S	-2.52		-22.35	-4.67	-43.00	-6.88	-18.49	361.29
29	17	12		CL	-15.88		-17.25	-3.90	-37.91	-10.88	-17.40	373.87
28	18	10		A	-30.48		-17.72	-8.66	-33.28	-13.87	-15.76	387.69
27	19	8		K	-35.49	-0.15	-12.88	-6.89	-28.92	-15.59	-13.11	391.91
26	20	6		CA	-43.21	-0.07	-13.83	-10.38	-25.03	-17.68	-11.32	398.84
25	21	4		SC	-41.92	-0.16	-8.31	-8.99	-20.45	-20.19	-9.25	396.77
24	22	2		TI	-43.75	0.38	-10.04	-12.89	-16.66	-22.33	-7.60	397.82
34	13	21	47	AL	79.04		-26.64	-0.15	-59.12	1.36	-26.15	290.14
32	15	17		P	25.33		-22.51	-2.41	-50.78	-3.35	-22.52	342.29
31	16	15		S	4.43		-22.53	-1.12	-44.86	-5.78	-19.04	362.41
30	17	13		CL	-12.66		-17.43	-4.85	-39.78	-8.75	-16.91	378.72
29	18	11		A	-26.49		-17.90	-4.08	-35.14	-12.74	-16.28	391.77
28	19	9		K	-36.26	-0.01	-13.06	-8.84	-30.78	-15.73	-14.90	400.75
27	20	7		CA	-42.20	0.14	-14.01	-7.07	-26.89	-17.45	-12.73	405.91
26	21	5		SC	-44.40	-0.08	-8.49	-10.56	-22.31	-19.55	-10.25	407.33
25	22	3		TI	-44.84	0.08	-10.22	-9.17	-18.52	-22.06	-8.97	406.99
24	23	1		V	-42.14	-0.13	-5.69	0.	-15.72	0.	-8.30	403.51
34	14	20	48	SI	56.75		-29.58	-1.28	-56.23	0.05	-24.71	319.72
32	16	16		S	8.96		-23.66	-3.54	-46.18	-4.66	-19.36	365.95
31	17	14		CL	-6.84		-18.56	-2.25	-41.09	-7.09	-16.71	380.96
30	18	12		A	-24.40		-19.03	-5.98	-36.46	-10.06	-15.04	397.74
29	19	10		K	-33.40		-14.19	-5.21	-32.09	-14.06	-14.68	405.96
28	20	8		CA	-44.11	0.11	-15.14	-9.98	-28.20	-17.04	-13.78	415.89
27	21	6		SC	-44.53	-0.03	-9.62	-8.20	-23.63	-18.76	-10.92	415.53
26	22	4		TI	-48.46	0.02	-11.35	-11.69	-19.84	-20.86	-9.22	418.68
25	23	2		V	-44.37	0.10	-6.82	-10.30	-17.03	0.	-8.93	413.80
24	24	0		CR	-43.27	-0.20	-8.41	0.	-14.10	0.	-8.13	411.92
34	15	19	49	P	40.40		-23.64	-1.28	-53.22	-1.08	-23.56	343.36
32	17	15		CL	-2.30		-18.55	-3.54	-42.21	-5.78	-17.27	384.50
31	18	13		A	-18.57		-19.02	-2.24	-37.58	-8.22	-15.07	399.99
30	19	11		K	-31.30		-14.19	-5.97	-33.22	-11.18	-13.67	411.93
29	20	9		CA	-41.24	0.05	-15.13	-5.21	-29.33	-15.18	-13.77	421.09
28	21	7		SC	-46.43	0.12	-9.61	-9.97	-24.75	-18.17	-12.19	425.50
27	22	5		TI	-48.59	-0.03	-11.34	-8.19	-20.96	-19.89	-10.11	426.87
26	23	3		V	-47.98	-0.03	-6.81	-11.69	-18.16	-21.98	-9.41	425.49
25	24	1		CR	-45.49	-0.10	-8.40	-10.29	-15.22	0.	-8.98	422.21
36	14	22	50	SI	74.91		-30.73	-0.45	-58.49	2.01	-25.92	317.71
34	16	18		S	22.89		-24.81	-2.43	-48.44	-2.22	-20.10	368.17
33	17	16		CL	4.83		-19.70	-0.94	-43.36	-4.48	-17.27	385.44
32	18	14		A	-15.18		-20.17	-4.69	-38.72	-6.93	-15.09	404.67
31	19	12		K	-26.62		-15.34	-3.39	-34.36	-9.36	-13.16	415.32
30	20	10		CA	-40.29		-16.28	-7.12	-30.47	-12.33	-12.23	428.21
29	21	8		SC	-44.71	0.25	-10.76	-6.35	-25.89	-16.32	-11.65	431.86
28	22	6		TI	-51.63	-0.20	-12.49	-11.12	-22.10	-19.31	-10.85	437.99
27	23	4		V	-49.26	-0.04	-7.96	-9.34	-19.30	-21.03	-9.77	434.83
26	24	2		CR	-50.25	-0.00	-9.55	-12.83	-16.36	-23.13	-8.93	435.04
36	15	21	51	P	57.49		-24.70	-0.36	-55.43	0.95	-23.98	342.41
34	17	17		CL	10.56		-19.62	-2.34	-44.42	-3.28	-17.20	387.78
33	18	15		A	-7.97		-20.09	-0.86	-39.79	-5.54	-14.83	405.53
32	19	13		K	-23.15		-15.25	-4.60	-35.42	-7.99	-12.91	419.92
31	20	11		CA	-35.53		-16.20	-3.30	-31.53	-10.43	-11.46	431.52
30	21	9		SC	-43.68		-10.68	-7.04	-26.96	-13.39	-9.85	438.89
29	22	7		TI	-49.83	-0.09	-12.41	-6.27	-23.17	-17.39	-10.05	444.26
28	23	5		V	-52.22	-0.02	-7.87	-11.03	-20.36	-20.38	-10.24	445.87
27	24	3		CR	-51.44	0.01	-9.47	-9.26	-17.43	-22.09	-9.02	444.30
26	25	1		MN	-48.16	0.10	-5.20	0.	-14.75	0.	-8.44	440.24
36	16	20	52	S	39.00		-25.78	-1.42	-50.48	-0.03	-20.17	368.19
34	18	16		A	-3.30		-21.15	-3.40	-40.76	-4.26	-14.68	408.93
33	19	14		K	-16.99		-16.31	-1.92	-36.40	-6.52	-12.58	421.84
32	20	12		CA	-33.11		-17.26	-5.66	-32.51	-8.96	-11.14	437.18
31	21	10		SC	-39.97		-11.74	-4.36	-27.93	-11.40	-9.00	443.25
30	22	8		TI	-49.85	-0.31	-13.46	-8.09	-24.14	-14.36	-8.17	452.36
29	23	6		V	-51.48	-0.04	-8.93	-7.33	-21.34	-18.36	-9.37	453.19
28	24	4		CR	-55.46	-0.05	-10.53	-12.09	-18.40	-21.35	-9.42	456.39
27	25	2		MN	-50.40	0.30	-6.26	-10.32	-15.72	0.	-8.46	450.56
26	26	0		FE	-48.23	0.10	-7.36	0.	-12.56	0.	-7.39	447.60

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
36	17	19	53	CL	25.18		-21.11	-1.86	-46.89	-1.52	-17.64	389.30
35	18	17		A	4.68		-21.58	-0.09	-42.25	-3.49	-14.98	409.02
34	19	15		K	-12.75		-16.74	-3.83	-37.89	-5.75	-12.88	425.67
33	20	13		CA	-27.39		-17.69	-2.35	-34.00	-8.01	-11.25	439.53
32	21	11		SC	-37.99		-12.17	-6.09	-29.42	-10.46	-9.12	449.35
31	22	9		TI	-46.58		-13.90	-4.80	-25.63	-12.89	-7.76	457.15
30	23	7		V	-51.93	0.25	-9.37	-8.53	-22.83	-15.86	-7.92	461.72
29	24	5		CR	-55.15	0.13	-10.96	-7.76	-19.89	-19.85	-8.98	464.15
28	25	3		MN	-54.86	-0.18	-6.69	-12.53	-17.22	-22.84	-9.30	463.08
27	26	1		FE	-50.91	-0.21	-7.79	-10.75	-14.05	0.	-7.84	458.35
38	16	22	54	S	56.37		-27.26	-0.82	-53.45	1.23	-20.96	366.97
36	18	18		A	9.85		-22.63	-2.91	-43.73	-3.00	-15.46	411.93
35	19	16		K	-5.82		-17.79	-1.14	-39.37	-4.97	-13.08	426.81
34	20	14		CA	-24.20		-18.74	-4.88	-35.48	-7.23	-11.44	444.41
33	21	12		SC	-33.32		-13.22	-3.40	-30.90	-9.49	-9.13	452.74
32	22	10		TI	-45.65		-14.95	-7.14	-27.11	-11.94	-7.78	464.29
31	23	8		V	-49.70	-0.07	-10.41	-5.84	-24.31	-14.37	-7.42	467.57
30	24	6		CR	-56.65	0.28	-12.01	-9.58	-21.37	-17.34	-7.44	473.73
29	25	4		MN	-55.60	-0.04	-7.74	-8.81	-18.70	-21.33	-8.76	471.89
28	26	2		FE	-56.41	-0.16	-8.84	-13.57	-15.53	-24.32	-8.58	471.92
38	17	21	55	CL	40.94		-22.72	-1.39	-49.98	-0.39	-18.98	389.69
36	19	17		K	-1.22		-18.36	-3.47	-40.99	-4.62	-14.21	430.29
35	20	15		CA	-17.84		-19.31	-1.71	-37.10	-6.59	-12.29	446.12
34	21	13		SC	-30.70		-13.78	-5.45	-32.52	-8.85	-9.97	458.19
33	22	11		TI	-41.54		-15.51	-3.97	-28.73	-11.11	-8.44	468.26
32	23	9		V	-49.34		-10.98	-7.71	-25.93	-13.55	-8.09	475.28
31	24	7		CR	-54.99	0.12	-12.58	-6.41	-22.99	-15.99	-7.59	480.14
30	25	5		MN	-57.67	0.04	-8.31	-10.14	-20.31	-18.95	-7.87	482.04
29	26	3		FE	-57.71	-0.24	-9.41	-9.38	-17.15	-22.95	-8.70	481.30
28	27	1		CO	-53.93	0.08	-4.81	0.	-13.65	0.	-8.20	476.73
40	16	24	56	S	74.79		-28.70	-0.27	-56.51	2.27	-22.89	364.69
38	18	20		A	24.16		-24.06	-2.26	-46.79	-1.83	-17.26	413.75
37	19	18		K	6.41		-19.23	-0.44	-42.42	-3.91	-14.99	430.72
36	20	16		CA	-14.11		-20.17	-4.34	-38.53	-6.05	-13.24	450.46
35	21	14		SC	-25.20		-14.65	-2.58	-33.96	-8.03	-10.64	460.77
34	22	12		TI	-39.79		-16.38	-6.32	-30.17	-10.28	-9.10	474.57
33	23	10		V	-46.10		-11.85	-4.83	-27.36	-12.54	-8.56	480.11
32	24	8		CR	-55.50	-0.21	-13.44	-8.58	-24.43	-14.99	-8.07	488.72
31	25	6		MN	-56.88	0.03	-9.17	-7.28	-21.75	-17.43	-7.83	489.32
30	26	4		FE	-60.65	-0.05	-10.28	-11.01	-18.58	-20.39	-7.62	492.31
29	27	2		CO	-56.10	-0.07	-5.68	-10.24	-15.09	0.	-8.12	486.98
28	28	0		NI	-53.61	0.30	-6.97	0.	-11.78	0.	-7.81	483.71
40	17	23	57	CL	58.23		-23.85	-0.53	-52.54	1.15	-20.54	388.54
38	19	19		K	11.97		-19.48	-2.51	-43.55	-2.95	-15.64	433.24
37	20	17		CA	-6.73		-20.43	-0.69	-39.66	-5.03	-13.83	451.15
36	21	15		SC	-21.73		-14.91	-4.60	-35.08	-7.17	-11.40	465.37
35	22	13		TI	-34.55		-16.64	-2.83	-31.29	-9.15	-9.58	477.41
34	23	11		V	-44.60		-12.11	-6.57	-28.49	-11.40	-9.04	486.68
33	24	9		CR	-52.51		-13.70	-5.09	-25.55	-13.66	-8.36	493.81
32	25	7		MN	-57.64	-0.16	-9.43	-8.83	-22.87	-16.11	-8.13	498.15
31	26	5		FE	-60.12	0.06	-10.53	-7.54	-19.70	-18.55	-7.40	499.85
30	27	3		CO	-59.30	0.04	-5.93	-11.27	-16.21	-21.51	-6.87	498.25
29	28	1		NI	-56.04	0.06	-7.23	-10.50	-12.91	0.	-7.56	494.21
40	18	22	58	A	40.12		-25.40	-1.61	-49.25	-0.19	-18.68	413.94
38	20	18		CA	-2.25		-21.51	-3.59	-40.99	-4.29	-14.52	454.75
37	21	16		SC	-15.43		-15.99	-1.77	-36.42	-6.37	-12.03	467.14
36	22	14		TI	-32.16		-17.72	-5.68	-32.63	-8.51	-10.38	483.08
35	23	12		V	-40.45		-13.19	-3.91	-29.82	-10.49	-9.55	490.59
34	24	10		CR	-52.10		-14.78	-7.65	-26.89	-12.74	-8.87	501.46
33	25	8		MN	-55.74	-0.09	-10.51	-6.17	-24.21	-15.00	-8.46	504.32
32	26	6		FE	-61.96	0.19	-11.61	-9.91	-21.04	-17.45	-7.74	509.76
31	27	4		CO	-59.85	-0.01	-7.02	-8.62	-17.55	-19.88	-6.68	506.86
30	28	2		NI	-60.32	-0.09	-8.31	-12.35	-14.24	-22.85	-6.34	506.55

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
42	17	25	59	CL	76.28		-25.36	-0.26	-55.39	1.91	-22.34	386.63
40	19	21		K	26.41		-20.99	-2.04	-46.39	-1.70	-16.95	434.94
39	20	19		CA	5.73		-21.94	-0.09	-42.50	-3.68	-15.04	454.83
38	21	17		SC	-11.38		-16.42	-4.02	-37.93	-5.80	-12.58	471.16
37	22	15		TI	-26.29		-18.15	-2.20	-34.14	-7.88	-10.87	485.29
36	23	13		V	-38.48		-13.62	-6.11	-31.34	-10.02	-10.21	496.70
35	24	11		CR	-48.37		-15.21	-4.34	-28.40	-12.00	-9.25	505.80
34	25	9		MN	-55.75		-10.94	-8.08	-25.72	-14.25	-8.83	512.40
33	26	7		FE	-60.49	0.17	-12.04	-6.60	-22.55	-16.51	-7.92	516.36
32	27	5		CO	-62.12	0.12	-7.45	-10.34	-19.06	-18.96	-6.87	517.21
31	28	3		NI	-61.30	-0.14	-8.74	-9.05	-15.75	-21.40	-6.01	515.60
30	29	1		CU	-56.51	-0.15	-3.48	0.	-11.79	0.	-5.00	510.03
42	18	24	60	A	56.80		-26.77	-1.21	-52.13	0.54	-20.42	413.41
40	20	20		CA	10.82		-22.88	-2.99	-43.88	-3.07	-15.77	457.82
39	21	18		SC	-4.34		-17.36	-1.03	-39.30	-5.06	-13.18	472.20
38	22	16		TI	-23.18		-19.09	-4.97	-35.51	-7.17	-11.50	490.26
37	23	14		V	-33.56		-14.56	-3.15	-32.71	-9.26	-10.78	499.85
36	24	12		CR	-47.35		-16.16	-7.05	-29.77	-11.40	-9.99	512.86
35	25	10		MN	-52.97		-11.89	-5.29	-27.10	-13.37	-9.29	517.69
34	26	8		FE	-61.45	0.06	-12.99	-9.03	-23.93	-15.63	-8.37	525.39
33	27	6		CO	-61.59	0.06	-8.39	-7.54	-20.43	-17.89	-7.14	524.75
32	28	4		NI	-64.51	-0.04	-9.68	-11.29	-17.13	-20.34	-6.28	526.89
31	29	2		CU	-58.43	-0.08	-4.42	-9.99	-13.16	0.	-4.75	520.03
30	30	0		ZN	-54.18		-4.96	0.	-8.44	0.	-2.99	514.99
42	19	23	61	K	41.77		-22.32	-1.59	-49.09	-0.79	-18.89	435.72
40	21	19		SC	0.36		-17.74	-3.37	-40.63	-4.40	-14.03	475.56
39	22	17		TI	-16.53		-19.47	-1.41	-36.84	-6.38	-12.22	491.67
38	23	15		V	-30.84		-14.94	-5.35	-34.03	-8.50	-11.54	505.20
37	24	13		CR	-42.81		-16.54	-3.53	-31.10	-10.58	-10.68	516.39
36	25	11		MN	-52.33		-12.27	-7.43	-28.42	-12.72	-10.15	525.12
35	26	9		FE	-59.04	0.09	-13.37	-5.67	-25.25	-14.70	-8.95	531.06
34	27	7		CO	-62.93	0.00	-8.77	-9.41	-21.76	-16.95	-7.71	534.16
33	28	5		NI	-64.37	-0.15	-10.06	-7.92	-18.45	-19.21	-6.67	534.81
32	29	3		CU	-62.03	-0.04	-4.80	-11.67	-14.49	-21.66	-5.15	531.69
31	30	1		ZN	-56.48	0.10	-5.34	-10.37	-9.76	0.	-2.86	525.37
44	18	26	62	A	74.09		-28.16	-0.99	-54.84	1.15	-22.69	412.26
42	20	22		CA	24.78		-24.27	-2.59	-46.59	-2.18	-17.76	460.00
41	21	20		SC	7.85		-18.75	-0.59	-42.01	-3.95	-14.96	476.15
40	22	18		TI	-12.83		-20.48	-4.37	-38.22	-5.79	-13.00	496.04
39	23	16		V	-25.19		-15.95	-2.42	-35.42	-7.77	-12.18	507.62
38	24	14		CR	-41.09		-17.54	-6.35	-32.48	-9.88	-11.36	522.74
37	25	12		MN	-48.79		-13.27	-4.54	-29.81	-11.97	-10.77	529.66
36	26	10		FE	-59.41		-14.37	-8.44	-26.64	-14.11	-9.74	539.50
35	27	8		CO	-61.53	-0.00	-9.78	-6.68	-23.14	-16.08	-8.22	540.83
34	28	6		NI	-66.71	0.04	-11.07	-10.41	-19.84	-18.34	-7.17	545.23
33	29	4		CU	-62.89	-0.07	-5.81	-8.93	-15.87	-20.60	-5.47	540.63
32	30	2		ZN	-61.09	0.04	-6.35	-12.68	-11.15	-23.05	-3.19	538.04
44	19	25	63	K	57.81		-23.57	-1.23	-51.73	-0.10	-20.90	435.82
42	21	21		SC	13.08		-18.99	-2.83	-43.26	-3.42	-15.76	478.99
41	22	19		TI	-5.59		-20.72	-0.83	-39.47	-5.20	-13.74	496.87
40	23	17		V	-21.73		-16.19	-4.61	-36.67	-7.03	-12.77	512.23
39	24	15		CR	-35.68		-17.78	-2.66	-33.73	-9.02	-11.82	525.40
38	25	13		MN	-47.31		-13.51	-6.59	-31.06	-11.13	-11.26	536.25
37	26	11		FE	-56.12		-14.61	-4.78	-27.89	-13.22	-10.17	544.27
36	27	9		CO	-62.14	-0.22	-10.02	-8.68	-24.39	-15.36	-8.82	549.51
35	28	7		NI	-65.55	-0.04	-11.31	-6.92	-21.09	-17.33	-7.49	552.15
34	29	5		CU	-65.47	0.11	-6.05	-10.66	-17.12	-19.59	-5.78	551.28
33	30	3		ZN	-62.19	0.03	-6.59	-9.17	-12.40	-21.85	-3.32	547.21
32	31	1		GA	-56.61	0.11	-2.81	0.	-9.16	0.	-2.52	540.85
46	18	28	64	A	91.65		-29.53	-0.81	-57.46	1.41	-25.13	410.84
44	20	24		CA	39.46		-25.64	-2.35	-49.20	-1.46	-19.76	461.46
43	21	22		SC	20.92		-20.12	-0.24	-44.63	-3.07	-16.79	479.23
42	22	20		TI	-1.48		-21.85	-3.96	-40.84	-4.79	-14.72	500.83
41	23	18		V	-15.61		-17.32	-1.96	-38.04	-6.57	-13.69	514.19
40	24	16		CR	-33.35		-18.91	-5.74	-35.10	-8.40	-12.59	531.14
39	25	14		MN	-43.03		-14.64	-3.79	-32.42	-10.38	-11.89	540.04
38	26	12		FE	-55.77		-15.74	-7.72	-29.25	-12.50	-10.84	552.00
37	27	10		CO	-59.97		-11.14	-5.90	-25.76	-14.58	-9.43	555.42
36	28	8		NI	-67.29	-0.18	-12.44	-9.81	-22.46	-16.72	-8.27	561.95
35	29	6		CU	-65.44	-0.01	-7.18	-8.04	-18.49	-18.70	-6.28	559.32
34	30	4		ZN	-65.90	0.10	-7.71	-11.78	-13.77	-20.95	-3.81	558.99
33	31	2		GA	-58.84	0.09	-3.94	-10.30	-10.53	0.	-2.83	551.15
32	32	0		GE	-54.03		-4.71	0.	-7.53	0.	-2.28	545.57

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
46	19	27	65	K	74.19		-24.75	-0.87	-54.27	0.23	-23.20	435.59
44	21	23		SC	26.58		-20.17	-2.41	-45.81	-2.64	-17.61	481.63
43	22	21		TI	6.30		-21.90	-0.29	-42.02	-4.25	-15.43	501.13
42	23	19		V	-11.56		-17.37	-4.01	-39.22	-5.97	-14.34	518.20
41	24	17		CR	-27.29		-18.96	-2.01	-36.28	-7.75	-13.19	533.15
40	25	15		MN	-40.75		-14.69	-5.79	-33.60	-9.58	-12.34	545.83
39	26	13		FE	-51.54		-15.79	-3.84	-30.43	-11.56	-11.15	555.84
38	27	11		CO	-59.68		-11.20	-7.78	-26.94	-13.68	-9.77	563.19
37	28	9		NI	-65.17	-0.04	-12.49	-5.96	-23.64	-15.76	-8.56	567.91
36	29	7		CU	-67.23	0.03	-7.23	-9.86	-19.67	-17.90	-6.73	569.18
35	30	5		ZN	-65.92	-0.00	-7.77	-8.10	-14.95	-19.88	-3.98	567.09
34	31	3		GA	-62.60	0.06	-3.99	-11.84	-11.71	-22.13	-3.00	562.99
33	32	1		GE	-56.31	-0.05	-4.77	-10.35	-8.71	0.	-2.26	555.92
48	18	30	66	A	109.71		-30.63	-0.54	-59.74	1.92	-27.24	408.92
46	20	26		CA	54.74		-26.74	-1.91	-51.48	-0.87	-21.77	462.33
45	21	24		SC	34.65		-21.22	-0.00	-46.91	-2.41	-18.74	481.63
44	22	22		TI	10.92		-22.95	-3.45	-43.12	-3.74	-16.29	504.58
43	23	20		V	-4.82		-18.42	-1.34	-40.32	-5.35	-15.09	519.54
42	24	18		CR	-24.28		-20.01	-5.06	-37.38	-7.07	-13.87	538.21
41	25	16		MN	-35.74		-15.74	-3.06	-34.70	-8.85	-12.98	548.89
40	26	14		FE	-50.30		-16.84	-6.84	-31.53	-10.68	-11.64	562.68
39	27	12		CO	-56.49		-12.24	-4.89	-28.04	-12.66	-10.12	568.08
38	28	10		NI	-65.92	0.13	-13.54	-8.82	-24.74	-14.78	-8.94	576.73
37	29	8		CU	-66.16	0.09	-8.28	-7.00	-20.77	-16.86	-7.06	576.19
36	30	6		ZN	-68.76	0.13	-8.81	-10.91	-16.05	-19.00	-4.47	578.00
35	31	4		GA	-63.67	0.04	-5.04	-9.14	-12.81	-20.98	-3.21	572.13
34	32	2		GE	-61.12	-0.38	-5.81	-12.88	-9.81	-23.23	-2.46	568.80
48	19	29	67	K	90.88		-26.12	-0.87	-56.75	0.55	-25.43	435.04
46	21	25		SC	40.48		-21.55	-2.24	-48.28	-2.24	-19.75	483.87
45	22	23		TI	18.67		-23.27	-0.33	-44.49	-3.78	-17.50	504.91
44	23	21		V	-0.53		-18.74	-3.78	-41.69	-5.12	-16.04	523.32
43	24	19		CR	-17.87		-20.34	-1.67	-38.75	-6.73	-14.71	539.88
42	25	17		MN	-33.05		-16.07	-5.39	-36.08	-8.44	-13.75	554.28
41	26	15		FE	-45.62		-17.17	-3.38	-32.91	-10.22	-12.36	566.06
40	27	13		CO	-55.59		-12.57	-7.17	-29.41	-12.05	-10.70	575.25
39	28	11		NI	-63.07	0.13	-13.87	-5.21	-26.11	-14.04	-9.38	581.95
38	29	9		CU	-67.24	0.05	-8.61	-9.15	-22.14	-16.15	-7.53	585.34
37	30	7		ZN	-68.02	-0.15	-9.14	-7.33	-17.42	-18.24	-4.89	585.33
36	31	5		GA	-66.83	0.03	-5.37	-11.23	-14.18	-20.38	-3.79	583.36
35	32	3		GE	-62.52	-0.06	-6.14	-9.47	-11.18	-22.35	-2.76	578.27
34	33	1		AS	-56.11		-2.28	0.	-8.09	0.	-1.93	571.08
50	18	32	68	A	127.94		-31.90	-0.43	-62.39	2.09	-29.36	406.84
48	20	28		CA	70.15		-28.01	-1.81	-54.13	-0.73	-23.92	463.06
46	22	24		TI	23.55		-24.22	-3.19	-45.77	-3.52	-18.34	508.09
45	23	22		V	6.26		-19.69	-1.28	-42.97	-5.06	-17.08	524.60
44	24	20		CR	-14.53		-21.29	-4.73	-40.03	-6.39	-15.48	544.61
43	25	18		MN	-27.60		-17.02	-2.61	-37.35	-8.00	-14.41	556.89
42	26	16		FE	-43.88		-18.12	-6.34	-34.18	-9.72	-12.96	572.40
41	27	14		CO	-51.85		-13.52	-4.33	-30.69	-11.50	-11.24	579.58
40	28	12		NI	-63.11		-14.81	-8.12	-27.39	-13.33	-9.77	590.06
39	29	10		CU	-65.33	0.08	-9.55	-6.16	-23.42	-15.31	-7.79	591.50
38	30	8		ZN	-70.04	-0.05	-10.09	-10.10	-18.70	-17.43	-5.18	595.43
37	31	6		GA	-67.04	0.03	-6.31	-8.28	-15.46	-19.51	-4.02	591.64
36	32	4		GE	-66.64	-0.07	-7.09	-12.18	-12.46	-21.65	-3.16	590.45
35	33	2		AS	-58.46		-3.23	-10.42	-9.37	0.	-2.05	581.50
34	34	0		SE	-53.56		-4.73	0.	-7.01	0.	-1.95	575.81
50	19	31	69	K	107.80		-27.43	-0.79	-59.33	0.78	-27.68	434.27
48	21	27		SC	54.59		-22.85	-2.17	-50.87	-2.04	-22.02	485.91
47	22	25		TI	31.40		-24.58	-0.22	-47.08	-3.41	-19.61	508.32
46	23	23		V	10.79		-20.05	-3.55	-44.27	-4.83	-18.22	528.15
45	24	21		CR	-8.09		-21.65	-1.64	-41.34	-6.37	-16.82	546.24
44	25	19		MN	-24.61		-17.38	-5.09	-38.66	-7.70	-15.48	561.98
43	26	17		FE	-38.79		-18.48	-2.97	-35.49	-9.31	-13.92	575.37
42	27	15		CO	-50.47		-13.88	-6.70	-32.00	-11.03	-12.15	586.28
41	28	13		NI	-59.73		-15.17	-4.69	-28.69	-12.81	-10.62	594.75
40	29	11		CU	-65.74		-9.91	-8.48	-24.73	-14.64	-8.49	599.97
39	30	9		ZN	-68.49	-0.07	-10.45	-6.52	-20.00	-16.62	-5.74	601.95
38	31	7		GA	-69.43	-0.10	-6.68	-10.46	-16.76	-18.74	-4.62	602.10
37	32	5		GE	-67.20	-0.10	-7.45	-8.64	-13.77	-20.82	-3.71	595.09
36	33	3		AS	-62.93	0.27	-3.59	-12.54	-10.68	-22.96	-2.76	594.04
35	34	1		SE	-56.27		-5.09	-10.78	-8.32	0.	-2.38	586.59

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
50	20	30	70	CA	85.85		-29.24	-1.66	-56.67	-0.45	-26.29	463.51
48	22	26		TI	36.43		-25.45	-3.04	-48.30	-3.26	-20.74	511.36
47	23	24		V	17.77		-20.92	-1.09	-45.50	-4.64	-19.31	529.24
46	24	22		CR	-4.44		-22.51	-4.41	-42.56	-6.05	-17.78	550.66
45	25	20		MN	-19.05		-18.24	-2.50	-39.89	-7.59	-16.65	564.49
44	26	18		FE	-36.67		-19.34	-5.96	-36.72	-8.93	-14.82	581.33
43	27	16		CO	-46.24		-14.75	-3.84	-33.22	-10.54	-12.93	590.12
42	28	14		NI	-59.22		-16.04	-7.56	-29.92	-12.26	-11.35	602.32
41	29	12		CU	-63.22		-10.78	-5.56	-25.95	-14.03	-9.16	605.53
40	30	10		ZN	-69.76	-0.21	-11.32	-9.34	-21.23	-15.87	-6.26	611.29
39	31	8		GA	-68.75	0.15	-7.54	-7.39	-17.99	-17.85	-5.01	609.49
38	32	6		GE	-70.46	0.10	-8.32	-11.32	-14.99	-19.96	-4.12	610.42
37	33	4		AS	-64.37	-0.04	-4.45	-9.51	-11.90	-22.05	-3.12	603.55
36	34	2		SE	-61.60		-5.96	-13.41	-9.55	-24.19	-2.90	600.00
50	21	29	71	SC	69.16		-23.97	-1.91	-53.21	-1.57	-24.14	487.48
48	23	25		V	22.55		-21.17	-3.29	-46.62	-4.38	-20.36	532.53
47	24	23		CR	2.29		-22.76	-1.34	-43.68	-5.75	-18.80	552.00
46	25	21		MN	-15.64		-18.49	-4.66	-41.00	-7.17	-17.53	569.15
45	26	19		FE	-31.35		-19.59	-2.75	-37.84	-8.71	-15.91	584.08
44	27	17		CO	-44.38		-15.00	-6.20	-34.34	-10.05	-13.75	596.32
43	28	15		NI	-55.24		-16.29	-4.09	-31.04	-11.66	-12.05	606.41
42	29	13		CU	-62.97		-11.03	-7.81	-27.07	-13.37	-9.80	613.35
41	30	11		ZN	-67.50	0.02	-11.57	-5.81	-22.35	-15.15	-6.86	617.10
40	31	9		GA	-70.27	-0.13	-7.79	-9.59	-19.11	-16.98	-5.45	619.08
39	32	7		GE	-70.02	-0.12	-8.57	-7.64	-16.11	-18.96	-4.43	618.06
38	33	5		AS	-67.87	0.02	-4.70	-11.57	-13.02	-21.08	-3.46	615.12
37	34	3		SE	-63.29	0.20	-6.21	-9.76	-10.66	-23.17	-3.19	609.76
36	35	1		BR	-56.45		-2.13	0.	-8.10	0.	-2.76	602.14
50	22	28	72	TI	49.93		-26.53	-2.73	-50.50	-2.64	-22.65	514.00
49	23	26		V	29.88		-22.00	-0.74	-47.69	-4.03	-21.23	533.26
48	24	24		CR	6.25		-23.59	-4.12	-44.76	-5.46	-19.73	556.12
47	25	22		MN	-9.73		-19.32	-2.17	-42.08	-6.83	-18.42	571.32
46	26	20		FE	-28.77		-20.42	-5.49	-38.91	-8.24	-16.67	589.57
45	27	18		CO	-39.89		-15.82	-3.58	-35.42	-9.79	-14.71	599.90
44	28	16		NI	-54.20		-17.12	-7.03	-32.11	-11.12	-12.75	613.44
43	29	14		CU	-59.81		-11.86	-4.92	-28.15	-12.73	-10.39	618.27
42	30	12		ZN	-68.07	0.07	-12.39	-8.64	-23.42	-14.45	-7.38	625.74
41	31	10		GA	-68.83	-0.25	-8.62	-6.64	-20.18	-16.23	-5.92	625.72
40	32	8		GE	-72.37	0.21	-9.39	-10.42	-17.19	-18.06	-4.76	628.48
39	33	6		AS	-68.26	-0.05	-5.53	-8.47	-14.10	-20.04	-3.65	623.59
38	34	4		SE	-67.62	0.00	-7.04	-12.40	-11.74	-22.16	-3.41	622.16
37	35	2		BR	-58.96		-2.96	-10.58	-9.17	0.	-2.92	612.72
36	36	0		KR	-53.82		-4.66	0.	-6.80	0.	-2.69	606.80
50	23	27	73	V	34.95		-22.27	-3.00	-48.79	-3.74	-22.06	536.27
49	24	25		CR	13.31		-23.86	-1.01	-45.85	-5.13	-20.51	557.12
48	25	23		MN	-6.05		-19.59	-4.39	-43.18	-6.55	-19.26	575.71
47	26	21		FE	-23.14		-20.69	-2.44	-40.01	-7.93	-17.47	592.01
46	27	19		CO	-37.58		-16.09	-5.76	-36.51	-9.34	-15.39	605.66
45	28	17		NI	-49.98		-17.39	-3.85	-33.21	-10.88	-13.62	617.29
44	29	15		CU	-59.04		-12.13	-7.30	-29.24	-12.22	-11.00	625.57
43	30	13		ZN	-65.19		-12.66	-5.19	-24.52	-13.83	-7.88	630.93
42	31	11		GA	-69.67	0.07	-8.89	-8.91	-21.28	-15.55	-6.36	634.63
41	32	9		GE	-71.21	0.09	-9.66	-6.91	-18.28	-17.32	-5.14	635.38
40	33	7		AS	-70.88	0.04	-5.80	-10.69	-15.19	-19.16	-3.88	634.28
39	34	5		SE	-68.28	-0.11	-7.31	-8.74	-12.84	-21.14	-3.50	630.89
38	35	3		BR	-63.56	-0.09	-3.23	-12.67	-10.27	-23.25	-3.05	625.39
37	36	1		KR	-56.60		-4.93	-10.85	-7.89	0.	-2.76	617.65
52	22	30	74	TI	67.75		-27.99	-0.23	-53.06	1.68	-20.52	512.33
50	24	26		CR	17.19		-25.05	-4.20	-47.32	-5.20	-21.66	561.32
49	25	24		MN	-0.18		-20.78	-2.20	-44.64	-6.59	-20.37	577.90
48	26	22		FE	-20.65		-21.88	-5.58	-41.47	-8.02	-18.63	597.59
47	27	20		CO	-33.13		-17.29	-3.63	-37.98	-9.39	-16.51	609.29
46	28	18		NI	-48.87		-18.58	-6.95	-34.67	-10.80	-14.62	624.24
45	29	16		CU	-56.01		-13.32	-5.04	-30.71	-12.34	-12.20	630.61
44	30	14		ZN	-65.61		-13.86	-8.49	-25.98	-13.68	-8.81	639.42
43	31	12		GA	-67.98	-0.16	-10.08	-6.38	-22.74	-15.29	-7.18	641.01
42	32	10		GE	-73.24	0.18	-10.86	-10.10	-19.74	-17.01	-5.90	645.49
41	33	8		AS	-70.91	-0.05	-6.99	-8.10	-16.66	-18.79	-4.59	642.37
40	34	6		SE	-72.09	0.12	-8.50	-11.88	-14.30	-20.62	-4.06	642.78
39	35	4		BR	-65.42	-0.01	-4.42	-9.93	-11.73	-22.60	-3.48	635.32
38	36	2		KR	-62.40	-0.09	-6.12	-13.86	-9.36	-24.72	-3.22	631.51

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
52	23	29	75	V	51.48		-23.55	-0.33	-51.54	0.39	-20.11	535.88
50	25	25		MN	3.60		-20.88	-4.29	-45.93	-6.49	-21.37	582.20
49	26	23		FE	-14.87		-21.98	-2.30	-42.76	-7.88	-19.59	599.88
48	27	21		CO	-30.74		-17.38	-5.68	-39.26	-9.30	-17.52	614.97
47	28	19		NI	-44.52		-18.68	-3.73	-35.96	-10.68	-15.59	627.97
46	29	17		CU	-54.99		-13.42	-7.05	-31.99	-12.09	-13.04	637.66
45	30	15		ZN	-62.68		-13.95	-5.14	-27.27	-13.63	-9.86	644.56
44	31	13		GA	-68.50	0.03	-10.18	-8.59	-24.03	-14.97	-7.96	649.60
43	32	11		GE	-71.64	0.19	-10.95	-6.48	-21.03	-16.58	-6.57	651.96
42	33	9		AS	-73.04	-0.00	-7.09	-10.20	-17.94	-18.30	-5.19	652.57
41	34	7		SE	-72.21	-0.05	-8.60	-8.19	-15.59	-20.07	-4.62	650.97
40	35	5		BR	-69.32	-0.16	-4.52	-11.98	-13.02	-21.91	-3.88	647.30
39	36	3		KR	-64.35	-0.01	-6.22	-10.03	-10.64	-23.89	-3.49	641.54
38	37	1		RB	-57.47		-2.36	0.	-8.48	0.	-3.44	633.87
52	24	28	76	CR	32.59		-26.18	-1.36	-49.73	-0.74	-19.76	562.06
51	25	26		MN	11.26		-21.91	-0.42	-47.06	-4.71	-21.05	582.61
50	26	24		FE	-12.12		-23.01	-5.33	-43.89	-7.62	-20.80	605.21
49	27	22		CO	-26.00		-18.42	-3.33	-40.39	-9.01	-18.69	618.30
48	28	20		NI	-43.16		-19.71	-6.71	-37.09	-10.44	-16.81	634.68
47	29	18		CU	-51.68		-14.45	-4.76	-33.13	-11.81	-14.22	642.42
46	30	16		ZN	-62.69		-14.99	-8.08	-28.40	-13.22	-10.91	652.64
45	31	14		GA	-66.60		-11.21	-6.17	-25.16	-14.76	-9.21	655.77
44	32	12		GE	-73.19	0.01	-11.99	-9.62	-22.16	-16.10	-7.55	661.59
43	33	10		AS	-72.47	-0.19	-8.12	-7.51	-19.07	-17.71	-6.07	660.08
42	34	8		SE	-75.38	-0.12	-9.63	-11.23	-16.72	-19.43	-5.43	662.20
41	35	6		BR	-70.48	0.15	-5.55	-9.23	-14.15	-21.21	-4.64	656.52
40	36	4		KR	-69.29	0.14	-7.25	-13.01	-11.77	-23.04	-4.10	654.55
39	37	2		RB	-60.45		-3.39	-11.06	-9.61	0.	-3.92	644.93
38	38	0		SR	-54.88		-4.70	0.	-7.06	0.	-3.48	638.57
52	25	27	77	MN	18.16		-21.72	-1.17	-47.90	-1.59	-19.22	583.78
51	26	25		FE	-4.28		-22.82	-0.23	-44.73	-5.55	-20.02	605.43
50	27	23		CO	-23.06		-18.23	-5.14	-41.24	-8.46	-19.43	623.43
49	28	21		NI	-38.23		-19.52	-3.14	-37.94	-9.85	-17.51	637.82
48	29	19		CU	-50.13		-14.26	-6.52	-33.97	-11.28	-14.98	648.94
47	30	17		ZN	-59.19		-14.80	-4.57	-29.25	-12.65	-11.63	657.21
46	31	15		GA	-66.42		-11.02	-7.89	-26.01	-14.07	-9.80	663.67
45	32	13		GE	-71.11	0.06	-11.80	-5.98	-23.01	-15.61	-8.34	667.57
44	33	11		AS	-73.84	0.08	-7.93	-9.43	-19.92	-16.94	-6.59	669.52
43	34	9		SE	-74.63	-0.02	-9.44	-7.32	-17.56	-18.55	-5.84	669.52
42	35	7		BR	-73.45	-0.21	-5.36	-11.04	-14.99	-20.27	-4.99	667.57
41	36	5		KR	-70.26	0.09	-7.07	-9.04	-12.62	-22.05	-4.40	663.59
40	37	3		RB	-65.20		-3.20	-12.82	-10.46	-23.88	-4.07	657.75
39	38	1		SR	-57.67		-4.51	-10.87	-7.90	0.	-3.49	649.44
54	24	30	78	CR	49.14		-26.90	-0.71	-51.30	0.41	-21.03	561.65
52	26	26		FE	1.72		-23.73	-2.08	-45.45	-2.30	-17.90	607.51
51	27	24		CO	-16.12		-19.13	-1.13	-41.95	-6.27	-18.37	624.57
50	28	22		NI	-36.20		-20.43	-6.04	-38.65	-9.18	-17.98	643.86
49	29	20		CU	-46.10		-15.17	-4.05	-34.69	-10.57	-15.39	652.98
48	30	18		ZN	-58.54		-15.70	-7.43	-29.96	-12.00	-12.10	664.64
47	31	16		GA	-63.82		-11.93	-5.48	-26.72	-13.37	-10.23	669.14
46	32	14		GE	-71.83	-0.07	-12.70	-8.80	-23.72	-14.78	-8.65	676.37
45	33	12		AS	-72.66	0.09	-8.84	-6.89	-20.63	-16.32	-7.10	676.41
44	34	10		SE	-76.89	0.13	-10.35	-10.34	-18.28	-17.66	-6.08	679.86
43	35	8		BR	-73.61	-0.16	-6.27	-8.23	-15.71	-19.27	-5.12	675.79
42	36	6		KR	-74.13	0.01	-7.97	-11.95	-13.34	-20.99	-4.47	675.54
41	37	4		RB	-67.08		-4.11	-9.94	-11.17	-22.77	-4.08	667.70
40	38	2		SR	-63.33		-5.42	-13.73	-8.62	-24.60	-3.36	663.17
54	25	29	79	MN	33.58		-22.85	-0.93	-49.75	-0.72	-20.32	584.50
53	26	27		FE	9.78		-23.95	-0.00	-46.58	-2.08	-18.52	607.52
52	27	25		CO	-10.35		-19.35	-2.30	-43.08	-3.43	-16.37	626.86
51	28	23		NI	-29.48		-20.65	-1.35	-39.78	-7.40	-17.03	645.21
50	29	21		CU	-44.29		-15.39	-6.26	-35.81	-10.31	-15.98	659.25
49	30	19		ZN	-54.74		-15.92	-4.27	-31.09	-11.69	-12.64	668.91
48	31	17		GA	-63.40		-12.15	-7.65	-27.85	-13.12	-10.83	676.79
47	32	15		GE	-69.46		-12.92	-5.70	-24.85	-14.50	-9.21	682.06
46	33	13		AS	-73.60	0.09	-9.06	-9.02	-21.76	-15.91	-7.53	685.43
45	34	11		SE	-75.93	-0.01	-10.57	-7.11	-19.40	-17.45	-6.72	686.97
44	35	9		BR	-76.10	-0.02	-6.49	-10.56	-16.84	-18.79	-5.49	686.35
43	36	7		KR	-74.51	-0.05	-8.19	-8.45	-14.46	-20.40	-4.72	683.99
42	37	5		RB	-71.17		-4.33	-12.17	-12.30	-22.11	-4.28	679.87
41	38	3		SR	-65.42		-5.64	-10.17	-9.75	-23.89	-3.50	673.33
40	39	1		Y	-58.02		-1.98	0.	-7.40	0.	-2.98	665.15

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
56	24	32	80	CR	65.98		-27.98	-0.66	-53.50	0.70	-22.30	560.95
54	26	28		FE	16.07		-24.81	-1.79	-47.66	-1.79	-18.95	609.31
53	27	26		CO	-3.14		-20.21	-0.86	-44.16	-3.16	-16.82	627.73
52	28	24		NI	-24.56		-21.50	-3.15	-40.86	-4.51	-14.86	648.37
51	29	22		CU	-38.43		-16.24	-2.21	-36.89	-8.47	-14.86	661.46
50	30	20		ZN	-53.78		-16.78	-7.12	-32.17	-11.39	-13.05	676.03
49	31	18		GA	-60.45		-13.00	-5.12	-28.93	-12.77	-11.20	681.91
48	32	16		GE	-69.89		-13.78	-8.50	-25.93	-14.20	-9.63	690.57
47	33	14		AS	-72.09	-0.34	-9.92	-6.55	-22.84	-15.57	-7.91	691.98
46	34	12		SE	-77.74	0.01	-11.42	-9.88	-20.48	-16.99	-6.97	696.85
45	35	10		BR	-75.99	-0.11	-7.35	-7.97	-17.91	-18.53	-5.94	694.32
44	36	8		KR	-77.86	0.03	-9.05	-11.42	-15.54	-19.87	-4.90	695.40
43	37	6		RB	-72.41	0.39	-5.19	-9.30	-13.38	-21.47	-4.35	689.17
42	38	4		SR	-70.38		-6.49	-13.03	-10.82	-23.19	-3.51	686.36
41	39	2		Y	-60.97		-2.84	-11.02	-8.47	0.	-2.94	676.17
40	40	0		ZR	-54.71		-3.98	0.	-5.96	0.	-2.26	669.12
56	25	31	81	MN	49.56		-23.71	-0.66	-51.69	-0.16	-21.61	584.66
54	27	27		CO	3.14		-20.22	-1.80	-45.02	-2.66	-17.44	629.52
53	28	25		NI	-17.36		-21.51	-0.87	-41.72	-4.02	-15.50	649.23
52	29	23		CU	-33.52		-16.25	-3.16	-37.75	-5.37	-12.89	664.62
51	30	21		ZN	-47.93		-16.79	-2.22	-33.03	-9.34	-12.13	678.24
50	31	19		GA	-59.51		-13.01	-7.13	-29.79	-12.25	-11.80	689.04
49	32	17		GE	-66.95		-13.79	-5.13	-26.79	-13.63	-10.19	695.70
48	33	15		AS	-72.52	0.08	-9.92	-8.51	-23.70	-15.06	-8.53	700.49
47	34	13		SE	-76.23	0.17	-11.43	-6.56	-21.34	-16.44	-7.54	703.41
46	35	11		BR	-77.80	0.17	-7.35	-9.88	-18.78	-17.85	-6.39	704.20
45	36	9		KR	-77.76	-0.09	-9.05	-7.97	-16.40	-19.39	-5.56	703.38
44	37	7		RB	-75.76	-0.33	-5.19	-11.42	-14.24	-20.73	-4.73	700.59
43	38	5		SR	-71.62		-6.50	-9.31	-11.69	-22.34	-3.79	695.67
42	39	3		Y	-65.93		-2.84	-13.03	-9.34	-24.05	-3.15	689.20
41	40	1		ZR	-57.66		-3.98	-11.03	-6.82	0.	-2.42	680.15
58	24	34	82	CR	83.90		-28.97	-0.40	-55.36	1.77	-23.43	559.18
56	26	30		FE	31.05		-25.80	-1.65	-49.51	-1.16	-20.52	610.47
55	27	28		CO	10.71		-21.21	-0.50	-46.02	-2.30	-18.16	630.02
54	28	26		NI	-12.07		-22.50	-2.79	-42.72	-3.65	-16.21	652.02
53	29	24		CU	-27.31		-17.24	-1.86	-38.75	-5.02	-13.61	666.47
52	30	22		ZN	-44.01		-17.78	-4.15	-34.03	-6.37	-10.24	682.39
51	31	20		GA	-54.64		-14.00	-3.21	-30.79	-10.33	-10.96	692.24
50	32	18		GE	-66.99		-14.78	-8.12	-27.79	-13.25	-10.88	703.81
49	33	16		AS	-70.57		-10.91	-6.12	-24.70	-14.63	-9.17	706.61
48	34	14		SE	-77.66	-0.07	-12.42	-9.50	-22.34	-16.06	-8.25	712.91
47	35	12		BR	-77.28	0.22	-8.34	-7.55	-19.77	-17.43	-7.05	711.75
46	36	10		KR	-80.56	0.03	-10.05	-10.87	-17.40	-18.85	-6.09	714.25
45	37	8		RB	-76.65	-0.23	-6.18	-8.96	-15.24	-20.39	-5.47	709.56
44	38	6		SR	-75.96	0.06	-7.49	-12.42	-12.68	-21.73	-4.25	708.09
43	39	4		Y	-68.16		-3.83	-10.30	-10.33	-23.33	-3.51	699.50
42	40	2		ZR	-63.62		-4.97	-14.02	-7.82	-25.05	-2.71	694.18
58	25	33	83	MN	66.49		-24.69	-0.39	-53.67	0.79	-22.60	583.88
56	27	29		CO	17.14		-21.20	-1.64	-47.00	-2.14	-18.87	631.66
55	28	27		NI	-4.49		-22.49	-0.49	-43.70	-3.28	-16.70	652.51
54	29	25		CU	-22.02		-17.23	-2.78	-39.73	-4.64	-14.09	669.25
53	30	23		ZN	-37.79		-17.77	-1.85	-35.01	-6.00	-10.73	684.24
52	31	21		GA	-50.71		-13.99	-4.14	-31.77	-7.35	-8.84	696.39
51	32	19		GE	-62.12		-14.77	-3.20	-28.77	-11.32	-9.81	707.01
50	33	17		AS	-70.61		-10.90	-8.11	-25.68	-14.23	-9.63	714.72
49	34	15		SE	-75.70	-0.26	-12.41	-6.11	-23.32	-15.61	-8.66	719.02
48	35	13		BR	-78.70	0.32	-8.34	-9.49	-20.76	-17.04	-7.52	721.25
47	36	11		KR	-80.03	-0.05	-10.04	-7.54	-18.38	-18.42	-6.52	721.79
46	37	9		RB	-79.45	-0.29	-6.17	-10.87	-16.22	-19.83	-5.77	720.42
45	38	7		SR	-76.84	0.28	-7.48	-8.96	-13.67	-21.37	-4.76	717.04
44	39	5		Y	-72.50		-3.82	-12.41	-11.32	-22.71	-3.75	711.91
43	40	3		ZR	-65.84		-4.97	-10.29	-8.80	-24.32	-2.84	704.47
42	41	1		CB	-57.45		-1.12	0.	-6.09	0.	-1.85	695.30
60	24	36	84	CR	102.35		-29.92	-0.18	-57.29	2.31	-24.76	556.88
58	26	32		FE	47.03		-26.75	-1.35	-51.44	-0.16	-21.38	610.62
56	28	28		NI	0.98		-23.44	-2.60	-44.64	-3.09	-17.51	655.11
55	29	26		CU	-15.39		-18.18	-1.44	-40.68	-4.22	-14.68	670.70
54	30	24		ZN	-33.45		-18.72	-3.73	-35.95	-5.58	-11.31	687.97
53	31	22		GA	-45.44		-14.95	-2.80	-32.71	-6.94	-9.44	699.19
52	32	20		GE	-59.15		-15.72	-5.09	-29.71	-8.29	-7.79	712.11
51	33	18		AS	-66.69		-11.86	-4.15	-26.63	-12.26	-8.66	718.87
50	34	16		SE	-76.68		-13.36	-9.06	-24.27	-15.17	-9.22	728.08
49	35	14		BR	-77.70	0.03	-9.29	-7.06	-21.70	-16.56	-8.04	728.31
48	36	12		KR	-82.40	0.03	-10.99	-10.44	-19.33	-17.99	-7.09	732.24
47	37	10		RB	-79.87	-0.12	-7.13	-8.49	-17.16	-19.36	-6.30	728.92
46	38	8		SR	-80.59	0.05	-8.43	-11.82	-14.61	-20.77	-5.16	728.86
45	39	6		Y	-74.33	0.01	-4.78	-9.91	-12.26	-22.31	-4.35	721.82
44	40	4		ZR	-71.12		-5.92	-13.36	-9.74	-23.65	-3.17	717.83
43	41	2		CB	-60.62		-2.07	-11.25	-7.04	0.	-2.08	706.54
42	42	0		MO	-53.92		-3.76	0.	-4.88	0.	-1.63	699.05

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
60	25	35	85	MN	84.04		-25.59	-0.13	-55.51	1.41	-23.96	582.47
58	27	31		CO	32.22		-22.10	-1.29	-48.85	-1.06	-19.76	632.72
56	29	27		CU	-9.86		-18.13	-2.54	-41.58	-3.99	-15.42	673.24
55	30	25		ZN	-26.77		-18.67	-1.39	-36.85	-5.12	-11.84	689.37
54	31	23		GA	-41.05		-14.89	-3.68	-33.61	-6.48	-9.95	702.87
53	32	21		GE	-53.82		-15.67	-2.75	-30.61	-7.84	-8.32	714.86
52	33	19		AS	-63.66		-11.80	-5.04	-27.53	-9.19	-6.58	723.91
51	34	17		SE	-72.71		-13.31	-4.10	-25.17	-13.16	-8.19	732.18
50	35	15		BR	-78.63	0.05	-9.24	-9.01	-22.60	-16.07	-8.53	737.32
49	36	13		KR	-81.34	0.14	-10.94	-7.01	-20.23	-17.46	-7.54	739.25
48	37	11		RB	-82.19	-0.03	-7.08	-10.39	-18.06	-18.89	-6.81	739.31
47	38	9		SR	-80.96	0.09	-8.38	-8.44	-15.51	-20.26	-5.63	737.30
46	39	7		Y	-78.03	-0.24	-4.72	-11.77	-13.16	-21.67	-4.69	733.58
45	40	5		ZR	-72.91		-5.87	-9.86	-10.64	-23.21	-3.72	727.68
44	41	3		CB	-65.86		-2.02	-13.31	-7.94	-24.55	-2.35	719.85
43	42	1		MO	-57.04		-3.71	-11.19	-5.78	0.	-1.80	710.25
62	24	38	86	CR	121.16		-31.04	-0.27	-59.31	2.67	-26.32	554.21
60	26	34		FE	63.46		-27.87	-1.31	-53.46	0.28	-22.86	610.34
58	28	30		NI	14.95		-24.57	-2.47	-46.66	-2.18	-18.52	657.29
57	29	28		CU	-2.67		-19.31	-0.88	-42.70	-3.43	-15.81	674.12
56	30	26		ZN	-22.41		-19.84	-3.72	-37.97	-5.11	-12.76	693.08
55	31	24		GA	-35.54		-16.07	-2.56	-34.73	-6.24	-10.66	705.43
54	32	22		GE	-50.60		-16.84	-4.85	-31.74	-7.60	-9.02	719.71
53	33	20		AS	-59.51		-12.98	-3.92	-28.65	-8.97	-7.30	727.83
52	34	18		SE	-70.86		-14.49	-6.22	-26.29	-10.31	-6.29	738.40
51	35	16		BR	-75.83	-0.17	-10.41	-5.27	-23.72	-14.28	-7.68	742.59
50	36	14		KR	-83.45	-0.20	-12.11	-10.18	-21.35	-17.19	-8.22	749.43
49	37	12		RB	-82.30	0.42	-8.25	-8.19	-19.19	-18.58	-7.45	747.50
48	38	10		SR	-84.46	0.04	-9.56	-11.57	-16.63	-20.01	-6.32	748.87
47	39	8		Y	-79.57	-0.34	-5.90	-9.61	-14.28	-21.38	-5.34	743.20
46	40	6		ZR	-77.78	0.25	-7.04	-12.94	-11.76	-22.80	-4.24	740.62
45	41	4		CB	-68.81		-3.19	-11.03	-9.06	-24.34	-3.08	730.88
44	42	2		MO	-63.45		-4.88	-14.48	-6.90	-25.67	-2.26	724.73
62	25	37	87	MN	101.49		-26.95	-0.46	-57.99	1.31	-25.91	581.16
60	27	33		CO	47.29		-23.46	-1.49	-51.33	-1.08	-21.63	633.80
58	29	29		CU	2.75		-19.49	-2.65	-44.06	-3.54	-16.82	676.78
57	30	27		ZN	-15.41		-20.03	-1.07	-39.33	-4.79	-13.34	694.15
56	31	25		GA	-31.38		-16.25	-3.90	-36.09	-6.47	-11.79	709.34
55	32	23		GE	-45.28		-17.03	-2.75	-33.10	-7.60	-9.92	722.46
54	33	21		AS	-56.48		-13.16	-5.04	-30.01	-8.96	-8.19	732.87
53	34	19		SE	-66.89		-14.67	-4.11	-27.65	-10.33	-7.20	742.51
52	35	17		BR	-74.16		-10.60	-6.40	-25.08	-11.67	-5.98	748.99
51	36	15		KR	-80.84	-0.14	-12.30	-5.46	-22.71	-15.64	-7.57	754.89
50	37	13		RB	-84.60	-0.01	-8.43	-10.37	-20.55	-18.55	-8.32	757.86
49	38	11		SR	-84.76	0.11	-9.74	-8.37	-17.99	-19.94	-7.15	757.24
48	39	9		Y	-83.25	-0.10	-6.08	-11.75	-15.64	-21.37	-6.23	754.95
47	40	7		ZR	-79.51	0.14	-7.23	-9.80	-13.12	-22.74	-5.09	750.42
46	41	5		CB	-73.87		-3.38	-13.13	-10.42	-24.15	-3.80	744.00
45	42	3		MO	-66.59		-5.07	-11.22	-8.26	-25.70	-3.18	735.94
44	43	1		TC	-57.76		-1.61	0.	-6.48	0.	-2.74	726.33
64	24	40	88	CR	139.94		-31.97	-0.02	-61.60	2.64	-28.37	551.57
62	26	36		FE	79.98		-28.80	-1.20	-55.75	0.38	-24.79	609.96
60	28	32		NI	29.09		-25.49	-2.24	-48.95	-2.00	-20.37	659.29
59	29	30		CU	10.30		-20.23	-0.51	-44.99	-3.17	-17.57	677.29
58	30	28		ZN	-10.74		-20.77	-3.40	-40.26	-4.47	-14.14	697.55
57	31	26		GA	-25.12		-17.00	-1.81	-37.02	-5.72	-12.16	711.15
56	32	24		GE	-41.86		-17.77	-4.65	-34.02	-7.40	-10.84	727.11
55	33	22		AS	-51.90		-13.91	-3.49	-30.94	-8.53	-8.88	736.37
54	34	20		SE	-64.61		-15.41	-5.78	-28.58	-9.89	-7.88	748.29
53	35	18		BR	-70.94		-11.34	-4.85	-26.01	-11.25	-6.68	753.85
52	36	16		KR	-79.92	-0.07	-13.04	-7.15	-23.64	-12.60	-5.66	762.03
51	37	14		RB	-82.73	-0.08	-9.18	-6.20	-21.47	-16.57	-7.46	764.07
50	38	12		SR	-87.80	0.10	-10.48	-11.11	-18.92	-19.48	-7.82	768.35
49	39	10		Y	-84.29	-0.02	-6.83	-9.11	-16.57	-20.87	-6.85	764.07
48	40	8		ZR	-83.93	-0.16	-7.97	-12.50	-14.05	-22.30	-5.76	762.92
47	41	6		CB	-76.34	0.23	-4.12	-10.54	-11.35	-23.67	-4.43	754.55
46	42	4		MO	-72.39		-5.81	-13.87	-9.19	-25.08	-3.69	749.81
45	43	2		TC	-61.65		-2.35	-11.96	-7.41	0.	-3.45	738.29
44	44	0		RU	-54.62		-4.15	0.	-5.75	0.	-3.13	730.48

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
64	25	39	89	MN	119.17		-28.06	-0.39	-60.03	1.53	-28.16	579.63
62	27	35		CO	62.70		-24.57	-1.57	-53.37	-0.73	-23.76	634.53
60	29	31		CU	15.77		-20.60	-2.60	-46.10	-3.11	-18.88	679.89
59	30	29		ZN	-3.54		-21.14	-0.88	-41.37	-4.28	-15.31	698.43
58	31	27		GA	-20.81		-17.36	-3.76	-38.13	-5.58	-13.37	714.91
57	32	25		GE	-35.97		-18.14	-2.18	-35.13	-6.83	-11.63	729.29
56	33	23		AS	-48.84		-14.27	-5.01	-32.05	-8.51	-10.22	741.38
55	34	21		SE	-60.39		-15.78	-3.86	-29.69	-9.64	-9.00	752.15
54	35	19		BR	-69.02		-11.71	-6.15	-27.12	-11.00	-7.79	759.99
53	36	17		KR	-77.06	0.64	-13.41	-5.22	-24.75	-12.36	-6.78	767.25
52	37	15		RB	-82.17	0.13	-9.54	-7.51	-22.58	-13.71	-5.96	771.58
51	38	13		SR	-86.29	-0.08	-10.85	-6.57	-20.03	-17.68	-7.37	774.92
50	39	11		Y	-87.70	-0.02	-7.19	-11.48	-17.68	-20.59	-7.94	775.54
49	40	9		ZR	-85.34	-0.50	-8.34	-9.48	-15.16	-21.98	-6.80	772.40
48	41	7		CB	-81.13	-0.17	-4.49	-12.86	-12.46	-23.41	-5.53	767.41
47	42	5		MO	-75.23		-6.17	-10.91	-10.30	-24.78	-4.74	760.72
46	43	3		TC	-67.81		-2.72	-14.24	-8.52	-26.19	-4.38	752.53
45	44	1		RU	-58.87		-4.51	-12.33	-6.86	0.	-4.26	742.80
64	26	38	90	FE	97.23		-29.22	-0.45	-57.29	1.10	-26.35	608.86
62	28	34		NI	44.07		-25.92	-1.63	-50.49	-1.16	-21.82	660.45
60	30	30		ZN	1.87		-21.20	-2.66	-41.80	-3.54	-15.51	701.09
59	31	28		GA	-13.68		-17.42	-0.94	-38.56	-4.70	-13.43	715.85
58	32	26		GE	-31.72		-18.20	-3.82	-35.56	-6.00	-11.73	733.11
57	33	24		AS	-43.01		-14.33	-2.24	-32.47	-7.25	-9.89	743.62
56	34	22		SE	-57.40		-15.84	-5.07	-30.12	-8.93	-9.22	757.22
55	35	20		BR	-64.87		-11.77	-3.92	-27.55	-10.07	-7.78	763.91
54	36	18		KR	-75.20	-0.42	-13.47	-6.21	-25.17	-11.43	-6.77	773.46
53	37	16		RB	-79.38	-0.04	-9.60	-5.28	-23.01	-12.79	-5.97	776.86
52	38	14		SR	-85.79	0.14	-10.91	-7.57	-20.46	-14.14	-4.76	782.49
51	39	12		Y	-86.26	0.22	-7.25	-6.63	-18.11	-18.11	-6.38	782.17
50	40	10		ZR	-88.81	-0.04	-8.40	-11.54	-15.59	-21.02	-6.78	783.94
49	41	8		CB	-82.60	0.06	-4.55	-9.54	-12.89	-22.40	-5.46	776.95
48	42	6		MO	-80.08	0.08	-6.23	-12.92	-10.72	-23.83	-4.73	773.64
47	43	4		TC	-70.71		-2.78	-10.97	-8.95	-25.21	-4.32	763.50
46	44	2		RU	-65.10		-4.57	-14.30	-7.29	-26.62	-4.08	757.10
64	27	37	91	CO	79.24		-25.28	-1.10	-54.50	0.40	-24.67	634.13
62	29	33		CU	30.05		-21.31	-2.28	-47.23	-1.87	-19.67	681.76
61	30	31		ZN	9.70		-21.85	-0.24	-42.51	-2.90	-15.98	701.33
60	31	29		GA	-8.92		-18.07	-3.31	-39.27	-4.25	-14.09	719.16
59	32	27		GE	-25.24		-18.85	-1.59	-36.27	-5.41	-12.25	734.70
58	33	25		AS	-39.41		-14.98	-4.47	-33.18	-6.71	-10.46	748.09
57	34	23		SE	-52.21		-16.49	-2.89	-30.82	-7.96	-9.35	760.11
56	35	21		BR	-62.52		-12.41	-5.72	-28.26	-9.64	-8.47	769.64
55	36	19		KR	-71.70		-14.12	-4.57	-25.88	-10.78	-7.23	778.03
54	37	17		RB	-78.16	0.02	-10.25	-6.86	-23.72	-12.14	-6.42	783.71
53	38	15		SR	-83.65	0.03	-11.56	-5.93	-21.16	-13.50	-5.23	788.42
52	39	13		Y	-86.41	-0.05	-7.90	-8.22	-18.81	-14.85	-4.23	790.39
51	40	11		ZR	-88.01	-0.12	-9.04	-7.28	-16.30	-18.81	-5.68	791.22
50	41	9		CB	-86.72	0.03	-5.20	-12.19	-13.59	-21.73	-5.89	789.14
49	42	7		MO	-82.20	0.09	-6.88	-10.19	-11.43	-23.11	-5.11	783.83
48	43	5		TC	-76.21		-3.42	-13.57	-9.66	-24.54	-4.77	777.07
47	44	3		RU	-68.65		-5.22	-11.62	-8.00	-25.91	-4.48	768.72
46	45	1		RH	-59.34		-1.53	0.	-6.11	0.	-4.00	758.63
66	26	40	92	FE	115.14		-30.36	-0.22	-59.13	1.77	-27.22	607.09
64	28	36		NI	59.47		-27.06	-1.59	-52.34	-0.74	-22.94	661.19
62	30	32		ZN	15.00		-22.34	-2.77	-43.65	-3.01	-16.51	704.10
61	31	30		GA	-1.57		-18.56	-0.73	-40.41	-4.04	-14.30	719.89
60	32	28		GE	-20.96		-19.34	-3.80	-37.41	-5.39	-12.65	738.50
59	33	26		AS	-33.42		-15.47	-2.08	-34.32	-6.55	-10.73	750.17
58	34	24		SE	-49.10		-16.98	-4.96	-31.96	-7.85	-9.67	765.07
57	35	22		BR	-57.83		-12.90	-3.38	-29.39	-9.10	-8.35	773.01
56	36	20		KR	-69.84		-14.61	-6.21	-27.02	-10.78	-7.66	784.24
55	37	18		RB	-75.15	0.17	-10.74	-5.06	-24.86	-11.92	-6.63	788.77
54	38	16		SR	-82.93	-0.01	-12.05	-7.35	-22.30	-13.27	-5.43	795.76
53	39	14		Y	-84.75	0.08	-8.39	-6.42	-19.95	-14.64	-4.45	796.81
52	40	12		ZR	-88.65	-0.19	-9.53	-8.71	-17.44	-15.99	-3.28	799.93
51	41	10		CB	-86.41	0.02	-5.69	-7.77	-14.73	-19.95	-4.54	796.90
50	42	8		MO	-86.80	0.00	-7.37	-12.68	-12.57	-22.87	-5.29	796.51
49	43	6		TC	-78.82	-0.07	-3.91	-10.68	-10.80	-24.25	-4.90	787.75
48	44	4		RU	-74.64		-5.71	-14.06	-9.14	-25.68	-4.67	782.78
47	45	2		RH	-63.38		-2.02	-12.11	-7.24	0.	-4.15	770.74
46	46	0		PD	-55.51		-3.45	0.	-4.99	0.	-3.31	762.09

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
66	27	39	93	CO	96.58		-25.85	-0.30	-56.21	1.19	-25.01	632.94
64	29	35		CU	44.87		-21.89	-1.67	-48.95	-1.32	-20.25	683.08
62	31	31		GA	3.65		-18.65	-2.85	-40.98	-3.58	-14.55	722.74
61	32	29		GE	-13.71		-19.42	-0.81	-37.98	-4.61	-12.59	739.31
60	33	27		AS	-29.23		-15.56	-3.89	-34.89	-5.96	-10.85	754.06
59	34	25		SE	-43.19		-17.07	-2.16	-32.54	-7.13	-9.65	767.24
58	35	23		BR	-54.80		-12.99	-5.05	-29.97	-8.43	-8.39	778.06
57	36	21		KR	-65.23		-14.69	-3.46	-27.60	-9.68	-7.26	787.71
56	37	19		RB	-73.38		-10.83	-6.30	-25.43	-11.36	-6.78	795.07
55	38	17		SR	-80.00	-0.55	-12.14	-5.14	-22.88	-12.49	-5.36	800.91
54	39	15		Y	-84.11	0.14	-8.48	-7.43	-20.53	-13.85	-4.37	804.24
53	40	13		ZR	-87.08	0.06	-9.62	-6.50	-18.01	-15.21	-3.22	806.43
52	41	11		CB	-87.14	0.07	-5.77	-8.80	-15.31	-16.56	-1.86	805.70
51	42	9		MO	-86.58	0.20	-7.46	-7.85	-13.15	-20.53	-3.67	804.36
50	43	7		TC	-83.51	0.09	-4.00	-12.76	-11.37	-23.44	-4.80	800.51
49	44	5		RU	-77.33		-5.80	-10.77	-9.71	-24.83	-4.53	793.55
48	45	3		RH	-69.45		-2.11	-14.15	-7.82	-26.26	-4.07	784.89
47	46	1		PD	-59.63		-3.54	-12.20	-5.56	0.	-3.18	774.28
68	26	42	94	FE	133.86		-31.32	-0.03	-60.67	2.58	-28.26	604.51
66	28	38		NI	75.85		-28.02	-1.17	-53.87	0.24	-23.80	660.96
64	30	34		ZN	28.87		-23.29	-2.54	-45.18	-2.27	-17.62	706.37
63	31	32		GA	11.11		-19.52	-0.60	-41.94	-3.46	-15.57	723.35
62	32	30		GE	-9.36		-20.29	-3.73	-38.94	-4.54	-13.65	743.04
61	33	28		AS	-22.85		-16.43	-1.68	-35.85	-5.57	-11.59	755.74
60	34	26		SE	-39.88		-17.94	-4.76	-33.49	-6.92	-10.59	771.99
59	35	24		BR	-49.77		-13.86	-3.03	-30.93	-8.08	-9.18	781.10
58	36	22		KR	-63.08		-15.56	-5.92	-28.55	-9.38	-8.11	793.63
57	37	20		RB	-69.64		-11.70	-4.33	-26.39	-10.63	-7.19	799.41
56	38	18		SR	-79.09	-0.27	-13.01	-7.17	-23.84	-12.31	-6.32	808.08
55	39	16		Y	-82.06	0.21	-9.35	-6.02	-21.48	-13.45	-5.10	810.26
54	40	14		ZR	-87.32	-0.05	-10.49	-8.30	-18.97	-14.81	-3.95	814.73
53	41	12		CB	-86.44	-0.09	-6.65	-7.37	-16.26	-16.17	-2.61	813.07
52	42	10		MO	-88.18	0.23	-8.33	-9.67	-14.10	-17.52	-1.79	814.03
51	43	8		TC	-84.16	-0.02	-4.87	-8.72	-12.33	-21.48	-3.99	809.23
50	44	6		RU	-82.89		-6.67	-13.63	-10.67	-24.40	-5.24	807.18
49	45	4		RH	-73.02		-2.98	-11.64	-8.78	-25.78	-4.73	796.52
48	46	2		PD	-66.58		-4.41	-15.02	-6.52	-27.21	-3.90	789.30
68	27	41	95	CO	114.13		-27.02	-0.33	-58.34	1.41	-26.51	631.53
66	29	37		CU	60.08		-23.06	-1.47	-51.08	-0.94	-21.58	684.01
64	31	33		GA	16.34		-19.82	-2.84	-43.11	-3.45	-16.13	726.19
63	32	31		GE	-2.19		-20.60	-0.90	-40.11	-4.63	-14.32	743.94
62	33	29		AS	-18.80		-16.73	-4.03	-37.02	-5.71	-12.31	759.77
61	34	27		SE	-33.79		-18.24	-1.98	-34.67	-6.74	-10.98	773.98
60	35	25		BR	-46.75		-14.16	-5.06	-32.10	-8.09	-9.77	786.16
59	36	23		KR	-58.34		-15.86	-3.34	-29.72	-9.25	-8.55	796.96
58	37	21		RB	-67.79		-12.00	-6.22	-27.56	-10.56	-7.69	805.63
57	38	19		SR	-75.66		-13.31	-4.64	-25.01	-11.80	-6.39	812.71
56	39	17		Y	-81.46	0.00	-9.65	-7.47	-22.66	-13.49	-5.72	817.73
55	40	15		ZR	-85.56	0.10	-10.79	-6.32	-20.14	-14.62	-4.34	821.05
54	41	13		CB	-86.97	-0.19	-6.95	-8.61	-17.44	-15.98	-2.99	821.68
53	42	11		MO	-87.78	-0.07	-8.63	-7.68	-15.28	-17.34	-2.19	821.71
52	43	9		TC	-86.06	-0.01	-5.17	-9.97	-13.50	-18.69	-1.77	819.20
51	44	7		RU	-83.84	0.17	-6.97	-9.02	-11.84	-22.66	-4.07	816.20
50	45	5		RH	-78.88		-3.28	-13.93	-9.95	-25.57	-5.09	810.46
49	46	3		PD	-70.44		-4.71	-11.94	-7.69	-26.96	-4.22	801.24
48	47	1		AG	-60.58		-1.29	0.	-5.70	0.	-3.66	790.59
68	28	40	96	NI	92.70		-28.72	-0.73	-55.74	0.70	-24.87	660.25
66	30	36		ZN	43.38		-23.99	-1.88	-47.05	-1.64	-18.52	708.01
65	31	34		GA	24.25		-20.22	-0.16	-43.81	-3.01	-16.65	726.35
64	32	32		GE	2.63		-21.00	-3.25	-40.82	-4.15	-14.79	747.19
63	33	30		AS	-12.03		-17.13	-1.31	-37.73	-5.33	-12.89	761.07
62	34	28		SE	-30.15		-18.64	-4.43	-35.37	-6.41	-11.61	778.41
61	35	26		BR	-41.07		-14.56	-2.39	-32.80	-7.44	-10.08	788.54
60	36	24		KR	-55.73		-16.26	-5.46	-30.43	-8.79	-9.05	802.42
59	37	22		RB	-63.45		-12.40	-3.74	-28.27	-9.96	-8.05	809.36
58	38	20		SR	-74.21		-13.71	-6.62	-25.71	-11.26	-6.80	819.33
57	39	18		Y	-78.42	0.11	-10.05	-5.04	-23.36	-12.51	-5.70	822.76
56	40	16		ZR	-85.36	0.07	-11.19	-7.87	-20.84	-14.19	-4.86	828.92
55	41	14		CB	-85.62	0.02	-7.35	-6.72	-18.14	-15.32	-3.29	828.40
54	42	12		MO	-88.72	0.08	-9.03	-9.01	-15.98	-16.68	-2.49	830.71
53	43	10		TC	-86.07	-0.21	-5.57	-8.08	-14.20	-18.05	-2.08	827.28
52	44	8		RU	-86.14	-0.07	-7.37	-10.37	-12.54	-19.39	-1.77	826.57
51	45	6		RH	-80.24		-3.68	-9.43	-10.65	-23.36	-3.84	819.88
50	46	4		PD	-76.71		-5.11	-14.33	-8.39	-26.27	-4.50	815.57
49	47	2		AG	-64.84		-1.69	-12.34	-6.40	0.	-3.89	802.93
48	48	0		CD	-56.49		-3.21	0.	-4.50	0.	-3.41	793.79

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
68	29	39	97	CU	76.34		-23.65	-0.92	-52.36	0.12	-22.66	683.90
66	31	35		GA	30.26		-20.41	-2.06	-44.40	-2.22	-17.04	728.42
65	32	33		GE	10.36		-21.18	-0.35	-41.40	-3.60	-15.41	747.54
64	33	31		AS	-7.39		-17.32	-3.43	-38.31	-4.74	-13.47	764.50
63	34	29		SE	-23.57		-18.83	-1.49	-35.96	-5.92	-12.29	779.90
62	35	27		BR	-37.61		-14.75	-4.61	-33.39	-7.00	-10.80	793.16
61	36	25		KR	-50.23		-16.45	-2.57	-31.01	-8.03	-9.46	804.99
60	37	23		RB	-61.03		-12.59	-5.65	-28.85	-9.38	-8.65	815.01
59	38	21		SR	-70.06		-13.90	-3.92	-26.30	-10.54	-7.26	823.26
58	39	19		Y	-77.16		-10.24	-6.81	-23.95	-11.85	-6.21	829.57
57	40	17		ZR	-82.51	0.42	-11.38	-5.22	-21.43	-13.09	-4.94	834.14
56	41	15		CB	-85.61	0.00	-7.53	-8.06	-18.73	-14.77	-3.92	836.45
55	42	13		MO	-87.55	-0.01	-9.22	-6.90	-16.57	-15.91	-2.89	837.62
54	43	11		TC	-87.19	0.05	-5.76	-9.19	-14.79	-17.27	-2.47	836.47
53	44	9		RU	-86.33	-0.29	-7.56	-8.26	-13.13	-18.63	-2.18	834.84
52	45	7		RH	-82.72	-0.17	-3.87	-10.56	-11.24	-19.98	-1.63	830.44
51	46	5		PD	-78.25		-5.30	-9.61	-8.98	-23.95	-3.34	825.18
50	47	3		AG	-71.29		-1.88	-14.52	-6.99	-26.86	-4.27	817.45
49	48	1		CD	-60.95		-3.39	-12.53	-5.08	0.	-3.74	806.32
70	28	42	98	NI	110.21		-29.65	-0.60	-57.26	1.36	-26.08	658.89
68	30	38		ZN	58.71		-24.92	-1.66	-48.57	-0.81	-19.57	708.82
66	32	34		GE	15.62		-21.93	-2.80	-42.33	-3.15	-15.67	750.34
65	33	32		AS	-0.42		-18.06	-1.09	-39.24	-4.52	-13.96	765.60
64	34	30		SE	-19.67		-19.57	-4.18	-36.89	-5.67	-12.74	784.07
63	35	28		BR	-31.78		-15.49	-2.24	-34.32	-6.85	-11.35	795.39
62	36	26		KR	-47.52		-17.19	-5.36	-31.94	-7.93	-10.06	810.35
61	37	24		RB	-56.27		-13.33	-3.32	-29.78	-8.96	-8.93	818.32
60	38	22		SR	-68.38		-14.64	-6.39	-27.23	-10.31	-7.73	829.65
59	39	20		Y	-73.75		-10.98	-4.67	-24.88	-11.47	-6.54	834.24
58	40	18		ZR	-81.99	0.02	-12.12	-7.55	-22.36	-12.77	-5.32	841.70
57	41	16		CB	-83.50	0.01	-8.28	-5.97	-19.66	-14.02	-3.87	842.42
56	42	14		MO	-88.28	-0.17	-9.96	-8.80	-17.50	-15.70	-3.39	846.42
55	43	12		TC	-86.76	-0.24	-6.50	-7.65	-15.72	-16.84	-2.75	844.12
54	44	10		RU	-88.20	0.02	-8.30	-9.94	-14.06	-18.20	-2.45	844.77
53	45	8		RH	-83.66	0.36	-4.61	-9.01	-12.17	-19.56	-1.92	839.45
52	46	6		PD	-81.47		-6.04	-11.30	-9.91	-20.91	-1.01	836.48
51	47	4		AG	-73.58		-2.62	-10.36	-7.92	-24.88	-2.98	827.80
50	48	2		CD	-68.14		-4.14	-15.26	-6.01	-27.79	-3.99	821.58
70	29	41	99	CU	93.33		-24.16	-0.38	-53.81	0.85	-23.22	683.05
68	31	37		GA	45.07		-20.92	-1.44	-45.85	-1.33	-17.44	729.75
66	33	33		AS	5.08		-17.84	-2.58	-39.76	-3.67	-13.69	768.18
65	34	31		SE	-12.47		-19.34	-0.87	-37.40	-5.04	-12.70	784.94
64	35	29		BR	-27.65		-15.27	-3.95	-34.84	-6.18	-11.28	799.34
63	36	27		KR	-41.46		-16.97	-2.01	-32.46	-7.37	-10.09	812.36
62	37	25		RB	-53.33		-13.11	-5.13	-30.30	-8.45	-9.00	823.46
61	38	23		SR	-63.40		-14.41	-3.09	-27.75	-9.48	-7.48	832.74
60	39	21		Y	-71.85		-10.76	-6.16	-25.39	-10.83	-6.48	840.40
59	40	19		ZR	-78.36		-11.90	-4.44	-22.88	-11.99	-5.13	846.14
58	41	17		CB	-82.76	0.10	-8.05	-7.33	-20.17	-13.29	-3.72	849.75
57	42	15		MO	-85.95	0.01	-9.74	-5.74	-18.01	-14.54	-2.81	852.16
56	43	13		TC	-87.27	0.06	-6.28	-8.58	-16.24	-16.22	-2.72	852.69
55	44	11		RU	-87.55	0.07	-8.08	-7.42	-14.58	-17.36	-2.19	852.19
54	45	9		RH	-85.29	0.22	-4.39	-9.71	-12.69	-18.72	-1.66	849.16
53	46	7		PD	-82.18	-0.46	-5.82	-8.78	-10.43	-20.08	-0.77	845.26
52	47	5		AG	-76.58		-2.40	-11.07	-8.44	-21.43	-0.12	838.88
51	48	3		CD	-70.20		-3.91	-10.13	-6.53	-25.39	-2.18	831.71
50	49	1		IN	-61.18		-0.33	0.	-4.46	0.	-3.03	821.91
72	28	44	100	NI	128.54		-30.44	-0.35	-58.57	2.19	-26.77	656.69
70	30	40		ZN	74.90		-25.72	-1.40	-49.88	0.05	-20.22	708.77
68	32	36		GE	29.64		-22.72	-2.46	-43.64	-2.12	-16.16	752.46
67	33	34		AS	12.46		-18.85	-0.68	-40.55	-3.26	-14.21	768.86
66	34	32		SE	-8.00		-20.36	-3.60	-38.20	-4.47	-13.06	788.54
65	35	30		BR	-21.47		-16.29	-1.89	-35.63	-5.84	-11.86	801.23
64	36	28		KR	-38.35		-17.99	-4.97	-33.26	-6.98	-10.63	817.33
63	37	26		RB	-48.29		-14.12	-3.03	-31.09	-8.16	-9.65	826.48
62	38	24		SR	-61.48		-15.43	-6.15	-28.54	-9.24	-8.17	838.89
61	39	22		Y	-67.88		-11.77	-4.11	-26.19	-10.27	-6.85	844.51
60	40	20		ZR	-77.47		-12.92	-7.18	-23.67	-11.62	-5.69	853.32
59	41	18		CB	-80.14	-0.05	-9.07	-5.46	-20.97	-12.79	-4.15	855.21
58	42	16		MO	-86.22	-0.04	-10.75	-8.34	-18.81	-14.09	-3.29	860.50
57	43	14		TC	-85.95	-0.10	-7.30	-6.76	-17.03	-15.34	-2.76	859.45
56	44	12		RU	-89.07	0.15	-9.09	-9.59	-15.37	-17.02	-2.78	861.79
55	45	10		RH	-85.66	-0.08	-5.40	-8.44	-13.48	-18.15	-2.02	857.60
54	46	8		PD	-84.84	0.14	-6.84	-10.73	-11.22	-19.51	-1.12	855.99
53	47	6		AG	-78.31		-3.41	-9.80	-9.23	-20.87	-0.50	848.68
52	48	4		CD	-74.22		-4.93	-12.09	-7.32	-22.22	0.06	843.81
51	49	2		IN	-64.26		-1.35	-11.15	-5.26	0.	-1.84	833.06
50	50	0		SN	-57.00		-3.11	0.	-3.44	0.	-2.93	825.02

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
72	29	43	101	CU	110.53		-25.30	-0.46	-55.74	1.06	-24.46	681.99
70	31	39		GA	60.13		-22.06	-1.51	-47.78	-1.08	-18.63	730.83
68	33	35		AS	17.96		-18.97	-2.57	-41.69	-3.26	-14.72	771.43
67	34	33		SE	-0.73		-20.48	-0.80	-39.33	-4.40	-13.51	789.34
66	35	31		BR	-17.11		-16.40	-3.71	-36.76	-5.60	-12.14	804.94
65	36	29		KR	-32.28		-18.10	-2.00	-34.39	-6.97	-11.14	819.33
64	37	27		RB	-45.30		-14.24	-5.08	-32.23	-8.11	-10.12	831.57
63	38	25		SR	-56.55		-15.55	-3.14	-29.67	-9.29	-8.74	842.03
62	39	23		Y	-66.08		-11.89	-6.27	-27.32	-10.38	-7.47	850.78
61	40	21		ZR	-73.63		-13.03	-4.22	-24.81	-11.41	-5.99	857.54
60	41	19		CB	-79.37		-9.19	-7.30	-22.10	-12.76	-4.64	862.50
59	42	17		MO	-83.72	-0.22	-10.87	-5.58	-19.94	-13.92	-3.64	866.08
58	43	15		TC	-86.34	-0.02	-7.41	-8.46	-18.17	-15.22	-3.16	867.91
57	44	13		RU	-87.88	0.08	-9.21	-6.88	-16.51	-16.47	-2.75	868.66
56	45	11		RH	-87.30	0.09	-5.52	-9.71	-14.61	-18.15	-2.54	867.31
55	46	9		PD	-85.33	0.08	-6.95	-8.56	-12.36	-19.29	-1.42	864.55
54	47	7		AG	-81.08		-3.53	-10.85	-10.37	-20.64	-0.79	859.52
53	48	5		CD	-76.06		-5.04	-9.92	-8.46	-22.01	-0.24	853.72
52	49	3		IN	-68.40		-1.46	-12.21	-6.39	-23.36	0.47	845.27
51	50	1		SN	-60.19		-3.23	-11.26	-4.57	0.	-1.67	836.29
74	28	46	102	NI	146.76		-31.38	-0.44	-60.64	2.08	-28.20	654.62
72	30	42		ZN	91.17		-26.65	-1.28	-51.95	0.12	-21.46	708.64
70	32	38		GE	43.77		-23.65	-2.33	-45.71	-2.02	-17.36	754.48
69	33	36		AS	25.53		-19.79	-0.50	-42.62	-3.08	-15.33	771.94
68	34	34		SE	3.95		-21.30	-3.39	-40.27	-4.19	-14.09	792.73
67	35	32		BR	-10.66		-17.22	-1.62	-37.70	-5.33	-12.67	806.56
66	36	30		KR	-28.74		-18.92	-4.53	-35.32	-6.53	-11.49	823.86
65	37	28		RB	-40.05		-15.06	-2.82	-33.16	-7.90	-10.70	834.39
64	38	26		SR	-54.38		-16.37	-5.90	-30.61	-9.05	-9.29	847.93
63	39	24		Y	-61.97		-12.71	-3.96	-28.26	-10.23	-8.12	854.74
62	40	22		ZR	-72.64		-13.85	-7.09	-25.74	-11.31	-6.69	864.63
61	41	20		CB	-76.34		-10.00	-5.04	-23.04	-12.34	-5.01	867.55
60	42	18		MO	-83.77	-0.17	-11.69	-8.12	-20.88	-13.69	-4.20	874.19
59	43	16		TC	-84.67	-0.07	-8.23	-6.39	-19.10	-14.85	-3.59	874.31
58	44	14		RU	-89.08	0.02	-10.03	-9.28	-17.44	-16.15	-3.23	877.94
57	45	12		RH	-86.92	-0.15	-6.34	-7.69	-15.55	-17.40	-2.59	875.00
56	46	10		PD	-87.78	0.14	-7.77	-10.53	-13.29	-19.08	-2.01	875.08
55	47	8		AG	-82.39	0.23	-4.35	-9.37	-11.30	-20.22	-1.16	868.90
54	48	6		CD	-79.66		-5.86	-11.66	-9.39	-21.58	-0.61	865.39
53	49	4		IN	-71.06		-2.28	-10.73	-7.33	-22.94	0.10	856.00
52	50	2		SN	-65.15		-4.04	-13.03	-5.51	-24.29	0.57	849.31
74	29	45	103	CU	127.93		-26.12	-0.45	-57.50	1.25	-26.19	680.74
72	31	41		GA	75.57		-22.89	-1.29	-49.54	-0.70	-20.18	731.53
70	33	37		AS	31.26		-19.80	-2.34	-43.45	-2.84	-16.24	774.28
69	34	35		SE	11.51		-21.30	-0.51	-41.09	-3.90	-14.94	793.24
68	35	33		BR	-5.99		-17.23	-3.40	-38.52	-5.02	-13.49	809.96
67	36	31		KR	-22.30		-18.93	-1.63	-36.15	-6.16	-12.25	825.49
66	37	29		RB	-36.52		-15.07	-4.54	-33.99	-7.36	-11.29	838.93
65	38	27		SR	-49.14		-16.37	-2.83	-31.43	-8.73	-10.11	850.76
64	39	25		Y	-59.81		-12.72	-5.91	-29.08	-9.87	-8.90	860.65
63	40	23		ZR	-68.54		-13.86	-3.97	-26.57	-11.06	-7.57	868.60
62	41	21		CB	-75.36		-10.01	-7.09	-23.86	-12.14	-5.94	874.64
61	42	19		MO	-80.75		-11.70	-5.05	-21.70	-13.17	-4.81	879.25
60	43	17		TC	-84.72	0.20	-8.24	-8.13	-19.93	-14.52	-4.39	882.43
59	44	15		RU	-87.41	-0.14	-10.04	-6.40	-18.27	-15.68	-3.89	884.34
58	45	13		RH	-88.14	-0.13	-6.35	-9.29	-16.37	-16.98	-3.30	884.29
57	46	11		PD	-87.41	0.05	-7.78	-7.70	-14.12	-18.23	-2.29	882.78
56	47	9		AG	-84.85	0.02	-4.36	-10.54	-12.13	-19.91	-1.98	879.43
55	48	7		CD	-80.97		-5.87	-9.38	-10.22	-21.05	-1.21	874.77
54	49	5		IN	-74.66		-2.29	-11.67	-8.15	-22.41	-0.50	867.68
53	50	3		SN	-67.82		-4.05	-10.74	-6.33	-23.77	-0.05	860.06

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
74	30	44	104	ZN	107.96		-27.26	-1.05	-53.38	0.64	-23.01	708.00
72	32	40		GE	58.60		-24.26	-1.89	-47.15	-1.31	-18.73	755.79
71	33	38		AS	39.31		-20.40	-0.02	-44.06	-2.36	-16.69	774.30
70	34	36		SE	16.65		-21.90	-2.94	-41.70	-3.45	-15.42	796.18
69	35	34		BR	0.97		-17.83	-1.11	-39.13	-4.51	-13.91	811.07
68	36	32		KR	-18.23		-19.53	-4.00	-36.76	-5.63	-12.65	829.49
67	37	30		RB	-30.68		-15.67	-2.23	-34.60	-6.77	-11.63	841.16
66	38	28		SR	-46.21		-16.97	-5.14	-32.04	-7.97	-10.28	855.90
65	39	26		Y	-55.17		-13.32	-3.43	-29.69	-9.34	-9.30	864.08
64	40	24		ZR	-66.98		-14.46	-6.51	-27.17	-10.48	-7.92	875.11
63	41	22		CB	-71.86		-10.61	-4.57	-24.47	-11.66	-6.40	879.21
62	42	20		MO	-80.37		-12.30	-7.69	-22.31	-12.74	-5.32	886.94
61	43	18		TC	-82.30	-0.06	-8.84	-5.65	-20.53	-13.78	-4.58	888.08
60	44	16		RU	-88.07	0.02	-10.64	-8.72	-18.87	-15.13	-4.27	893.07
59	45	14		RH	-87.07	-0.12	-6.95	-7.00	-16.98	-16.29	-3.54	891.29
58	46	12		PD	-89.23	0.18	-8.38	-9.89	-14.72	-17.59	-2.58	892.67
57	47	10		AG	-85.08	0.06	-4.96	-8.30	-12.73	-18.84	-1.84	887.74
56	48	8		CD	-84.03	-0.09	-6.47	-11.14	-10.83	-20.52	-1.61	885.90
55	49	6		IN	-76.57		-2.89	-9.98	-8.76	-21.65	-0.68	877.66
54	50	4		SN	-72.02		-4.65	-12.27	-6.94	-23.01	-0.22	872.33
52	52	0		TE	-50.59		-1.03	0.	-0.02	0.	3.99	849.33
76	29	47	105	CU	145.72		-27.02	-0.26	-59.00	1.65	-27.55	679.09
74	31	43		GA	91.47		-23.78	-1.34	-51.04	-0.25	-21.49	731.78
72	33	39		AS	45.20		-20.69	-2.18	-44.95	-2.20	-17.35	776.48
71	34	37		SE	24.40		-22.20	-0.31	-42.59	-3.25	-16.05	796.49
70	35	35		BR	5.82		-18.12	-3.23	-40.02	-4.34	-14.57	814.30
69	36	33		KR	-11.56		-19.82	-1.40	-37.65	-5.40	-13.26	830.89
68	37	31		RB	-26.90		-15.96	-4.29	-35.49	-6.52	-12.21	845.45
67	38	29		SR	-40.65		-17.27	-2.52	-32.93	-7.66	-10.80	858.42
66	39	27		Y	-52.53		-13.61	-5.43	-30.58	-8.86	-9.65	869.51
65	40	25		ZR	-62.63		-14.75	-3.72	-28.07	-10.23	-8.50	878.83
64	41	23		CB	-70.59		-10.90	-6.80	-25.36	-11.37	-6.94	886.01
63	42	21		MO	-77.16		-12.59	-4.86	-23.20	-12.55	-5.96	891.80
62	43	19		TC	-82.21	0.38	-9.13	-7.98	-21.43	-13.63	-5.27	896.07
61	44	17		RU	-85.94	0.06	-10.93	-5.94	-19.76	-14.67	-4.64	899.01
60	45	15		RH	-88.01	-0.15	-7.24	-9.02	-17.87	-16.02	-4.10	900.30
59	46	13		PD	-88.45	-0.02	-8.67	-7.29	-15.62	-17.18	-3.00	899.96
58	47	11		AG	-87.19	-0.06	-5.25	-10.18	-13.63	-18.48	-2.31	897.91
57	48	9		CD	-84.55	-0.22	-6.76	-8.59	-11.72	-19.73	-1.65	894.50
56	49	7		IN	-79.92		-3.18	-11.43	-9.65	-21.41	-1.27	889.09
55	50	5		SN	-74.22		-4.94	-10.27	-7.83	-22.54	-0.58	882.60
53	52	1		TE	-54.15		-1.32	-11.63	-0.91	0.	3.62	860.96
76	30	46	106	ZN	125.01		-28.00	-0.71	-55.01	0.91	-24.17	707.09
74	32	42		GE	73.76		-25.00	-1.78	-48.77	-0.98	-19.83	756.77
72	34	38		SE	29.85		-22.64	-2.62	-43.33	-2.94	-16.34	799.12
71	35	36		BR	13.13		-18.56	-0.76	-40.76	-3.99	-14.82	815.06
70	36	34		KR	-7.16		-20.27	-3.68	-38.39	-5.08	-13.54	834.57
69	37	32		RB	-20.67		-16.40	-1.85	-36.22	-6.14	-12.44	847.29
68	38	30		SR	-37.32		-17.71	-4.74	-33.67	-7.25	-11.00	863.16
67	39	28		Y	-47.42		-14.05	-2.96	-31.32	-8.39	-9.79	872.47
66	40	26		ZR	-60.43		-15.19	-5.88	-28.80	-9.60	-8.47	884.70
65	41	24		CB	-66.68		-11.35	-4.16	-26.10	-10.97	-7.14	890.18
64	42	22		MO	-76.34		-13.03	-7.25	-23.94	-12.11	-6.12	899.05
63	43	20		TC	-79.45		-9.57	-5.31	-22.16	-13.29	-5.53	901.37
62	44	18		RU	-86.29	0.03	-11.37	-8.43	-20.50	-14.37	-4.95	907.44
61	45	16		RH	-86.33	0.04	-7.68	-6.39	-18.61	-15.40	-4.09	906.69
60	46	14		PD	-89.84	0.07	-9.11	-9.46	-16.35	-16.75	-3.18	909.42
59	47	12		AG	-86.85	0.09	-5.69	-7.74	-14.36	-17.92	-2.35	905.65
58	48	10		CD	-87.10	0.02	-7.21	-10.62	-12.45	-19.22	-1.75	905.12
57	49	8		IN	-80.89	-0.26	-3.63	-9.04	-10.39	-20.47	-0.93	898.12
56	50	6		SN	-78.02		-5.39	-11.87	-8.57	-22.15	-0.79	894.47
55	51	4		SB	-67.25		-0.32	-10.72	-5.26	-23.28	1.38	882.92
54	52	2		TE	-59.09		-1.77	-13.01	-1.64	-24.64	3.64	873.97

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY/ (MEV)
76	31	45	107	GA	107.91		-24.39	-0.87	-52.38	0.30	-22.44	731.48
74	33	41		AS	59.75		-21.30	-1.95	-46.30	-1.60	-18.25	778.07
72	35	37		BR	18.41		-18.73	-2.79	-41.37	-3.55	-15.28	817.85
71	36	35		KR	-0.02		-20.43	-0.92	-39.00	-4.60	-13.95	835.49
70	37	33		RB	-16.44		-16.57	-3.84	-36.84	-5.69	-12.88	851.14
69	38	31		SR	-31.26		-17.88	-2.01	-34.28	-6.75	-11.39	865.17
68	39	29		Y	-44.25		-14.22	-4.90	-31.93	-7.87	-10.15	877.38
67	40	27		ZR	-55.49		-15.86	-3.13	-29.41	-9.01	-8.78	887.83
66	41	25		CB	-64.66		-11.52	-6.04	-26.71	-10.21	-7.27	896.22
65	42	23		MO	-72.60		-13.20	-4.33	-24.55	-11.58	-6.48	903.38
64	43	21		TC	-78.79		-9.74	-7.41	-22.77	-12.72	-5.85	908.79
63	44	19		RU	-83.70	0.01	-11.54	-5.47	-21.11	-13.90	-5.37	912.91
62	45	17		RH	-86.85	0.00	-7.85	-8.60	-19.22	-14.98	-4.56	915.29
61	46	15		PD	-88.32	0.05	-9.28	-6.55	-16.96	-16.01	-3.33	915.97
60	47	13		AG	-88.41	-0.01	-5.86	-9.63	-14.97	-17.37	-2.69	915.28
59	48	11		CD	-86.94	0.05	-7.37	-7.90	-13.07	-18.53	-1.95	913.02
58	49	9		IN	-83.61	-0.11	-3.79	-10.79	-11.00	-19.83	-1.18	908.91
57	50	7		SN	-79.16		-5.55	-9.21	-9.18	-21.08	-0.61	903.68
56	51	5		SB	-71.22		-0.49	-12.04	-5.88	-22.76	1.01	894.96
55	52	3		TE	-61.90		-1.93	-10.89	-2.26	-23.89	3.50	884.86
78	30	48	108	ZN	142.20		-28.97	-0.77	-56.60	1.04	-25.67	706.05
76	32	44		GE	89.23		-25.97	-1.68	-50.36	-0.67	-21.15	757.45
74	34	40		SE	43.43		-23.61	-2.75	-44.91	-2.57	-17.60	801.69
73	35	38		BR	25.86		-19.54	-0.62	-42.34	-3.41	-15.88	818.47
72	36	36		KR	4.46		-21.24	-3.60	-39.97	-4.52	-14.61	839.09
71	37	34		RB	-10.10		-17.38	-1.73	-37.81	-5.57	-13.50	852.87
70	38	32		SR	-27.84		-18.68	-4.65	-35.25	-6.66	-12.03	869.82
69	39	30		Y	-39.00		-15.03	-2.82	-32.90	-7.72	-10.74	880.20
68	40	28		ZR	-53.13		-16.17	-5.71	-30.39	-8.84	-9.34	893.54
67	41	26		CB	-60.52		-12.32	-3.94	-27.68	-9.98	-7.78	900.16
66	42	24		MO	-71.37		-14.01	-6.85	-25.52	-11.18	-6.82	910.23
65	43	22		TC	-75.85		-10.55	-5.14	-23.75	-12.55	-6.42	913.92
64	44	20		RU	-83.84	-0.14	-12.34	-8.22	-22.09	-13.69	-5.90	921.13
63	45	18		RH	-85.06	-0.06	-8.65	-6.28	-20.19	-14.88	-5.19	921.57
62	46	16		PD	-89.65	-0.13	-10.09	-9.40	-17.94	-15.96	-4.01	925.38
61	47	14		AG	-87.70	-0.09	-6.66	-7.36	-15.95	-16.99	-3.05	922.64
60	48	12		CD	-89.30	-0.05	-8.18	-10.43	-14.04	-18.34	-2.50	923.46
59	49	10		IN	-84.25	0.48	-4.60	-8.71	-11.97	-19.50	-1.59	917.62
58	50	8		SN	-82.68		-6.36	-11.60	-10.15	-20.80	-1.07	915.27
57	51	6		SB	-73.16		-1.29	-10.01	-6.85	-22.05	0.98	904.97
56	52	4		TE	-66.67		-2.74	-12.84	-3.23	-23.73	2.92	897.70
54	54	0		XE	-44.40		-1.01	0.	0.11	0.	3.76	873.86
78	31	47	109	GA	124.45		-25.04	-0.62	-54.00	0.39	-23.69	731.08
76	33	43		AS	74.57		-21.95	-1.52	-47.92	-1.32	-19.32	779.39
74	35	39		BR	31.33		-19.38	-2.60	-42.99	-3.22	-16.29	821.07
73	36	37		KR	12.07		-21.08	-0.46	-40.62	-4.06	-14.76	839.55
72	37	35		RB	-5.47		-17.22	-3.44	-38.46	-5.17	-13.71	856.31
71	38	33		SR	-21.34		-18.53	-1.57	-35.90	-6.22	-12.20	871.39
70	39	31		Y	-35.42		-14.87	-4.49	-33.55	-7.31	-10.94	884.69
69	40	29		ZR	-47.72		-16.01	-2.66	-31.03	-8.37	-9.49	896.20
68	41	27		CB	-58.00		-12.16	-5.55	-28.33	-9.49	-7.90	905.71
67	42	25		MO	-67.08		-13.85	-3.78	-26.17	-10.63	-6.88	914.00
66	43	23		TC	-74.47		-10.39	-6.69	-24.39	-11.83	-6.31	920.62
65	44	21		RU	-80.75		-12.19	-4.98	-22.73	-13.20	-6.02	926.11
64	45	19		RH	-85.05	0.05	-8.50	-8.06	-20.84	-14.34	-5.27	929.63
63	46	17		PD	-87.70	-0.10	-9.93	-6.12	-18.58	-15.52	-4.19	931.50
62	47	15		AG	-88.87	-0.15	-6.51	-9.24	-16.59	-16.60	-3.28	931.88
61	48	13		CD	-88.43	0.13	-8.02	-7.20	-14.69	-17.64	-2.40	930.66
60	49	11		IN	-86.45	0.09	-4.44	-10.28	-12.62	-18.99	-1.69	927.90
59	50	9		SN	-83.16		-6.20	-8.55	-10.80	-20.15	-1.03	923.83
58	51	7		SB	-76.53		-1.14	-11.44	-7.50	-21.45	0.97	916.41
57	52	5		TE	-68.45		-2.58	-9.85	-3.88	-22.70	3.34	907.55
55	54	1		XE	-47.86		-0.85	-11.53	-0.54	0.	3.86	885.40

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
80	30	50	110	ZN	159.88		-29.53	-0.40	-57.81	1.54	-26.76	704.51
78	32	46		GE	105.21		-26.53	-1.33	-51.57	-0.17	-22.23	757.61
76	34	42		SE	57.69		-24.17	-2.24	-46.12	-1.88	-18.50	803.57
75	35	40		BR	39.05		-20.10	-0.36	-43.55	-2.96	-17.01	821.43
74	36	38		KR	16.82		-21.80	-3.32	-41.18	-3.78	-15.45	842.87
73	37	36		RB	1.42		-17.94	-1.18	-39.02	-4.62	-14.13	857.49
72	38	34		SR	-17.43		-19.24	-4.16	-36.46	-5.73	-12.69	875.55
71	39	32		Y	-29.64		-15.59	-2.29	-34.11	-6.78	-11.39	886.98
70	40	30		ZR	-44.85		-16.73	-5.21	-31.60	-7.87	-9.96	901.41
69	41	28		CB	-53.31		-12.88	-3.38	-28.89	-8.93	-8.32	909.09
68	42	26		MO	-65.28		-14.57	-6.27	-26.73	-10.05	-7.27	920.27
67	43	24		TC	-70.90		-11.11	-4.50	-24.96	-11.19	-6.64	925.11
66	44	22		RU	-80.09		-12.91	-7.41	-23.30	-12.39	-6.18	933.52
65	45	20		RH	-82.68	0.12	-9.22	-5.70	-21.40	-13.76	-5.66	935.33
64	46	18		PD	-88.41	-0.07	-10.65	-8.78	-19.15	-14.90	-4.54	940.28
63	47	16		AG	-87.64	-0.17	-7.23	-6.84	-17.16	-16.08	-3.74	938.72
62	48	14		CD	-90.32	0.02	-8.74	-9.96	-15.25	-17.17	-2.91	940.62
61	49	12		IN	-86.30	0.11	-5.16	-7.92	-13.18	-18.20	-1.87	935.82
60	50	10		SN	-86.08		-6.92	-10.99	-11.36	-19.55	-1.40	934.82
59	51	8		SB	-77.73		-1.86	-9.27	-8.06	-20.71	0.74	925.68
58	52	6		TE	-72.54		-3.30	-12.16	-4.44	-22.01	3.06	919.71
57	53	4		I	-61.42		-0.25	-10.57	-2.83	-23.26	3.41	907.80
56	54	2		XE	-53.20		-1.57	-13.41	-1.10	-24.94	3.46	898.80
80	31	49	111	GA	141.48		-25.68	-0.32	-55.21	0.89	-24.82	730.19
78	33	45		AS	89.90		-22.59	-1.26	-49.13	-0.81	-20.44	780.21
76	35	41		BR	44.95		-20.03	-2.17	-44.20	-2.53	-17.22	823.59
75	36	39		KR	24.61		-21.73	-0.29	-41.83	-3.60	-15.93	843.15
74	37	37		RB	6.25		-17.86	-3.24	-39.66	-4.43	-14.59	860.73
73	38	35		SR	-10.46		-19.17	-1.11	-37.11	-5.27	-12.87	876.66
72	39	33		Y	-25.65		-15.51	-4.09	-34.76	-6.38	-11.63	891.06
71	40	31		ZR	-39.00		-16.66	-2.22	-32.24	-7.43	-10.17	903.63
70	41	29		CB	-50.38		-12.81	-5.14	-29.54	-8.52	-8.55	914.23
69	42	27		MO	-60.52		-14.50	-3.31	-27.38	-9.58	-7.45	923.58
68	43	25		TC	-69.03		-11.04	-6.20	-25.60	-10.69	-6.79	931.31
67	44	23		RU	-76.44		-12.83	-4.42	-23.94	-11.84	-6.27	937.95
66	45	21		RH	-81.95		-9.14	-7.34	-22.05	-13.04	-5.58	942.67
65	46	19		PD	-85.97	0.04	-10.58	-5.63	-19.79	-14.41	-4.70	945.90
64	47	17		AG	-88.28	-0.08	-7.15	-8.71	-17.80	-15.55	-3.85	947.43
63	48	15		CD	-89.02	0.23	-8.67	-6.77	-15.89	-16.73	-3.12	947.39
62	49	13		IN	-88.12	0.04	-5.09	-9.89	-13.83	-17.81	-2.14	945.71
61	50	11		SN	-85.86	-0.22	-6.85	-7.85	-12.01	-18.84	-1.35	942.67
60	51	9		SB	-80.58		-1.78	-10.92	-8.71	-20.19	0.61	936.60
59	52	7		TE	-73.67		-3.23	-9.20	-5.08	-21.36	3.06	928.91
58	53	5		I	-65.43		-0.18	-12.08	-3.48	-22.66	3.37	919.89
57	54	3		XE	-55.63		-1.50	-10.50	-1.75	-23.91	3.85	909.30
82	30	52	112	ZN	177.88		-30.42	-0.20	-59.34	1.86	-27.65	702.65
80	32	48		GE	121.35		-27.42	-1.29	-53.11	-0.00	-23.27	757.61
78	34	44		SE	72.13		-25.07	-2.23	-47.66	-1.71	-19.53	805.27
77	35	42		BR	52.58		-20.99	-0.44	-45.09	-2.61	-17.87	824.04
76	36	40		KR	29.55		-22.69	-3.13	-42.72	-3.42	-16.30	846.28
75	37	38		RB	13.07		-18.83	-1.25	-40.56	-4.49	-15.22	861.98
74	38	36		SR	-6.60		-20.14	-4.21	-38.00	-5.32	-13.48	880.87
73	39	34		Y	-19.65		-16.48	-2.07	-35.65	-6.16	-11.97	893.14
72	40	32		ZR	-35.98		-17.62	-5.05	-33.13	-7.27	-10.57	908.68
71	41	30		CB	-45.49		-13.77	-3.18	-30.43	-8.32	-8.92	917.41
70	42	28		MO	-58.54		-15.46	-6.10	-28.27	-9.41	-7.84	929.68
69	43	26		TC	-65.23		-12.00	-4.27	-26.49	-10.47	-7.13	935.58
68	44	24		RU	-75.53		-13.80	-7.16	-24.83	-11.59	-6.58	945.11
67	45	22		RH	-79.26		-10.11	-5.39	-22.94	-12.73	-5.83	948.05
66	46	20		PD	-86.20	0.07	-11.54	-8.30	-20.68	-13.93	-4.78	954.21
65	47	18		AG	-86.79	-0.23	-8.12	-6.59	-18.69	-15.30	-4.16	954.02
64	48	16		CD	-90.62	-0.04	-9.63	-9.67	-16.79	-16.44	-3.39	957.06
63	49	14		IN	-87.78	0.20	-6.05	-7.73	-14.72	-17.62	-2.51	953.44
62	50	12		SN	-88.64	-0.00	-7.81	-10.85	-12.90	-18.70	-1.77	953.52
61	51	10		SB	-81.32		-2.75	-8.81	-9.60	-19.73	0.50	945.42
60	52	8		TE	-77.48		-4.19	-11.89	-5.98	-21.09	2.77	940.80
59	53	6		I	-67.52		-1.14	-10.16	-4.37	-22.25	3.22	930.05
58	54	4		XE	-60.60		-2.46	-13.05	-2.64	-23.55	3.65	922.35
56	56	0		BA	-37.80		-0.77	0.	0.82	0.	4.17	897.98

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
82	31	51	113	GA	158.60		-26.57	-0.13	-56.99	0.97	-25.95	729.22
80	33	47		AS	105.15		-23.48	-1.21	-50.91	-0.89	-21.72	781.10
78	35	43		BR	58.50		-20.92	-2.15	-45.98	-2.60	-18.50	826.19
77	36	41		KR	37.25		-22.62	-0.37	-43.61	-3.50	-17.03	846.65
76	37	39		RB	18.08		-18.75	-3.06	-41.45	-4.31	-15.68	865.04
75	38	37		SR	0.30		-20.06	-1.18	-38.89	-5.38	-14.20	882.04
74	39	35		Y	-15.71		-16.40	-4.13	-36.54	-6.21	-12.67	897.27
73	40	33		ZR	-29.91		-17.55	-2.00	-34.02	-7.05	-10.99	910.68
72	41	31		CB	-42.39		-13.70	-4.98	-31.32	-8.16	-9.40	922.38
71	42	29		MO	-53.58		-15.38	-3.11	-29.16	-9.21	-8.29	932.79
70	43	27		TC	-63.18		-11.93	-6.03	-27.38	-10.30	-7.61	941.61
69	44	25		RU	-71.66		-13.72	-4.20	-25.72	-11.36	-7.01	949.31
68	45	23		RH	-78.28		-10.03	-7.09	-23.83	-12.48	-6.23	955.14
67	46	21		PD	-83.44		-11.47	-5.31	-21.57	-13.62	-5.11	959.52
66	47	19		AG	-86.95	0.09	-8.04	-8.23	-19.58	-14.82	-4.32	962.25
65	48	17		CD	-89.06	-0.02	-9.56	-6.52	-17.68	-16.19	-3.79	963.58
64	49	15		IN	-89.31	0.03	-5.98	-9.60	-15.61	-17.33	-2.86	963.04
63	50	13		SN	-88.23	0.08	-7.74	-7.66	-13.79	-18.51	-2.23	961.18
62	51	11		SB	-84.03	-0.18	-2.67	-10.78	-10.49	-19.59	-0.00	956.20
61	52	9		TE	-78.15		-4.12	-8.74	-6.87	-20.62	2.59	949.53
60	53	7		I	-71.26		-1.07	-11.81	-5.26	-21.97	2.84	941.86
59	54	5		XE	-62.62		-2.39	-10.09	-3.53	-23.14	3.41	932.44
57	56	1		BA	-41.12		-0.70	-11.39	-0.07	0.	4.32	909.37
82	32	50	114	GE	137.67		-28.22	-1.00	-54.79	0.18	-24.63	757.44
80	34	46		SE	86.59		-25.86	-2.08	-49.34	-1.68	-21.05	806.96
79	35	44		BR	66.10		-21.78	-0.47	-46.77	-2.62	-19.42	826.66
78	36	42		KR	42.30		-23.48	-3.02	-44.40	-3.39	-17.81	849.67
77	37	40		RB	24.92		-19.62	-1.24	-42.24	-4.29	-16.55	866.28
76	38	38		SR	4.44		-20.93	-3.92	-39.68	-5.10	-14.80	885.97
75	39	36		Y	-9.69		-17.27	-2.04	-37.33	-6.18	-13.53	899.31
74	40	34		ZR	-26.84		-18.41	-5.00	-34.82	-7.00	-11.84	915.68
73	41	32		CB	-37.19		-14.57	-2.87	-32.11	-7.84	-9.97	925.25
72	42	30		MO	-51.35		-16.25	-5.84	-29.95	-8.95	-8.93	938.64
71	43	28		TC	-59.09		-12.79	-3.98	-28.18	-10.00	-8.20	945.58
70	44	26		RU	-70.48		-14.59	-6.89	-26.52	-11.09	-7.63	956.20
69	45	24		RH	-75.27		-10.90	-5.07	-24.62	-12.15	-6.80	960.21
68	46	22		PD	-83.32		-12.33	-7.95	-22.37	-13.27	-5.66	967.47
67	47	20		AG	-85.06	0.36	-8.91	-6.18	-20.38	-14.41	-4.81	968.43
66	48	18		CD	-90.09	-0.07	-10.42	-9.09	-18.47	-15.61	-4.10	972.67
65	49	16		IN	-88.62	-0.04	-6.84	-7.38	-16.40	-16.98	-3.40	970.42
64	50	14		SN	-90.62	-0.06	-8.61	-10.46	-14.58	-18.12	-2.73	971.65
63	51	12		SB	-84.48	-0.19	-3.54	-8.52	-11.28	-19.31	-0.61	964.72
62	52	10		TE	-81.73		-4.99	-11.65	-7.66	-20.39	1.93	961.18
61	53	8		I	-72.79		-1.93	-9.61	-6.05	-21.42	2.51	951.47
60	54	6		XE	-67.23		-3.25	-12.68	-4.32	-22.77	2.89	945.12
59	55	4		CS	-55.50		-0.17	-10.96	-2.56	-23.93	3.49	932.61
58	56	2		BA	-46.89		-1.56	-13.84	-0.87	-25.23	3.88	923.22
82	33	49	115	AS	120.63		-24.33	-0.98	-52.55	-0.67	-23.28	781.77
80	35	45		BR	72.11		-21.76	-2.06	-47.62	-2.53	-20.22	828.72
79	36	43		KR	49.93		-23.46	-0.45	-45.25	-3.47	-18.78	850.12
78	37	41		RB	29.99		-19.60	-3.00	-43.09	-4.24	-17.38	869.27
77	38	39		SR	11.30		-20.91	-1.22	-40.53	-5.14	-15.73	887.18
76	39	37		Y	-5.52		-17.25	-3.90	-38.18	-5.95	-14.19	903.22
75	40	35		ZR	-20.79		-18.39	-2.02	-35.66	-7.02	-12.75	917.71
74	41	33		CB	-34.09		-14.55	-4.98	-32.96	-7.85	-10.87	930.23
73	42	31		MO	-46.13		-16.23	-2.85	-30.80	-8.69	-9.55	941.48
72	43	29		TC	-56.84		-12.77	-5.82	-29.02	-9.80	-8.89	951.41
71	44	27		RU	-66.37		-14.57	-3.96	-27.36	-10.85	-8.28	960.16
70	45	25		RH	-74.07		-10.88	-6.87	-25.47	-11.94	-7.47	967.08
69	46	23		PD	-80.30		-12.31	-5.05	-23.21	-13.00	-6.28	972.52
68	47	21		AG	-84.92	-0.09	-8.89	-7.93	-21.22	-14.12	-5.40	976.36
67	48	19		CD	-88.18	-0.09	-10.41	-6.16	-19.32	-15.26	-4.64	978.83
66	49	17		IN	-89.62	-0.08	-6.82	-9.07	-17.25	-16.46	-3.77	979.50
65	50	15		SN	-89.92	0.11	-8.59	-7.36	-15.43	-17.83	-3.32	979.01
64	51	13		SB	-86.86	0.15	-3.52	-10.45	-12.13	-18.97	-1.16	975.17
63	52	11		TE	-82.16		-4.97	-8.51	-8.51	-20.15	1.28	969.69
62	53	9		I	-76.35		-1.91	-11.63	-6.90	-21.23	1.80	963.10
61	54	7		XE	-68.74		-3.24	-9.59	-5.17	-22.26	2.50	954.70
60	55	5		CS	-60.09		-0.15	-12.66	-3.40	-23.61	2.92	945.27
59	56	3		BA	-49.75		-1.54	-10.94	-1.71	-24.78	3.45	934.15

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERG (MEV)
82	34	48	116	SE	101.38		-26.53	-1.67	-50.86	-1.35	-22.39	808.30
81	35	46		BR	79.81		-22.46	-0.37	-48.30	-2.43	-20.91	829.09
80	36	44		KR	55.24		-24.16	-2.76	-45.92	-3.21	-19.31	852.88
79	37	42		RB	36.92		-20.30	-1.14	-43.76	-4.14	-18.09	870.42
78	38	40		SR	15.68		-21.60	-3.69	-41.21	-4.91	-16.30	890.88
77	39	38		Y	0.64		-17.95	-1.91	-38.86	-5.82	-14.85	905.13
76	40	36		ZR	-17.32		-19.09	-4.60	-36.34	-6.62	-13.14	922.31
75	41	34		CB	-28.74		-15.24	-2.72	-33.63	-7.70	-11.52	932.95
74	42	32		MO	-43.73		-16.93	-5.68	-31.47	-8.52	-10.18	947.16
73	43	30		TC	-52.31		-13.47	-3.54	-29.70	-9.36	-9.24	954.95
72	44	28		RU	-64.81		-15.27	-6.52	-28.04	-10.47	-8.69	966.67
71	45	26		RH	-70.65		-11.58	-4.65	-26.15	-11.53	-7.85	971.73
70	46	24		PD	-79.79		-13.01	-7.57	-23.89	-12.61	-6.69	980.09
69	47	22		AG	-82.59	0.02	-9.59	-5.74	-21.90	-13.67	-5.76	982.10
68	48	20		CD	-88.73	-0.02	-11.10	-8.63	-19.99	-14.79	-4.96	987.46
67	49	18		IN	-88.41	-0.21	-7.52	-6.86	-17.92	-15.93	-4.04	986.35
66	50	16		SN	-91.61	-0.09	-9.28	-9.77	-16.11	-17.13	-3.42	988.78
65	51	14		SB	-86.84	0.13	-4.21	-8.06	-12.80	-18.50	-1.49	983.22
64	52	12		TE	-85.23	0.18	-5.66	-11.14	-9.18	-19.65	0.99	980.83
63	53	10		I	-77.48		-2.61	-9.20	-7.58	-20.83	1.42	972.30
62	54	8		XE	-72.99		-3.93	-12.32	-5.84	-21.91	2.07	967.03
61	55	6		CS	-62.30		-0.84	-10.28	-4.08	-22.94	2.80	955.55
60	56	4		BA	-55.04		-2.24	-13.35	-2.39	-24.29	3.14	947.51
58	58	0		CE	-31.39		-0.63	0.	0.92	0.	3.98	922.30
82	35	47	117	BR	86.25		-22.43	-1.64	-48.96	-2.01	-21.33	830.73
81	36	45		KR	62.98		-24.13	-0.34	-46.58	-3.09	-20.04	853.21
80	37	43		RB	42.27		-20.26	-2.72	-44.42	-3.87	-18.66	873.14
79	38	41		SR	22.64		-21.57	-1.11	-41.87	-4.81	-17.04	891.99
78	39	39		Y	5.05		-17.91	-3.66	-39.52	-5.57	-15.46	908.79
77	40	37		ZR	-11.12		-19.05	-1.88	-37.00	-6.48	-13.85	924.18
76	41	35		CB	-25.24		-15.21	-4.57	-34.30	-7.29	-11.95	937.52
75	42	33		MO	-38.35		-16.89	-2.69	-32.14	-8.36	-10.86	949.84
74	43	31		TC	-49.88		-13.43	-5.64	-30.36	-9.18	-9.91	960.59
73	44	29		RU	-60.25		-15.23	-3.51	-28.70	-10.03	-9.09	970.18
72	45	27		RH	-69.07		-11.54	-6.49	-26.81	-11.14	-8.31	978.22
71	46	25		PD	-76.34		-12.98	-4.62	-24.55	-12.19	-7.11	984.71
70	47	23		AG	-82.06		-9.55	-7.54	-22.56	-13.28	-6.20	989.64
69	48	21		CD	-86.37	0.03	-11.07	-5.71	-20.65	-14.34	-5.36	993.17
68	49	19		IN	-88.93	-0.01	-7.49	-8.60	-18.59	-15.45	-4.41	994.95
67	50	17		SN	-90.37	0.02	-9.25	-6.82	-16.77	-16.59	-3.73	995.60
66	51	15		SB	-88.51	0.06	-4.18	-9.74	-13.46	-17.79	-1.62	992.96
65	52	13		TE	-85.18	-0.11	-5.63	-8.03	-9.84	-19.17	0.63	988.85
64	53	11		I	-80.52		-2.58	-11.11	-8.24	-20.31	1.09	983.40
63	54	9		XE	-74.09		-3.90	-9.17	-6.51	-21.49	1.64	976.19
62	55	7		CS	-66.51		-0.81	-12.29	-4.74	-22.57	2.32	967.84
61	56	5		BA	-57.21		-2.21	-10.25	-3.05	-23.60	2.98	957.75
59	58	1		CE	-34.92		-0.60	-11.60	0.26	0.	3.77	933.90
82	36	46	118	KR	68.62		-24.92	-2.43	-47.34	-2.77	-20.39	855.64
81	37	44		RB	49.21		-21.06	-1.13	-45.18	-3.85	-19.31	874.27
80	38	42		SR	27.19		-22.36	-3.51	-42.63	-4.63	-17.54	895.50
79	39	40		Y	11.22		-18.71	-1.90	-40.28	-5.56	-16.12	910.69
78	40	38		ZR	-7.51		-19.85	-4.45	-37.76	-6.33	-14.37	928.64
77	41	36		CB	-19.84		-16.00	-2.67	-35.06	-7.24	-12.58	940.19
76	42	34		MO	-35.63		-17.69	-5.36	-32.90	-8.04	-11.22	955.20
75	43	32		TC	-45.28		-14.23	-3.48	-31.12	-9.12	-10.52	964.07
74	44	30		RU	-58.61		-16.02	-6.43	-29.46	-9.94	-9.68	976.62
73	45	28		RH	-65.30		-12.33	-4.30	-27.57	-10.78	-8.63	982.52
72	46	26		PD	-75.55		-13.77	-7.28	-25.31	-11.90	-7.49	991.98
71	47	24		AG	-79.40		-10.34	-5.41	-23.32	-12.95	-6.55	995.05
70	48	22		CD	-86.63	0.02	-11.86	-8.33	-21.41	-14.04	-5.73	1001.50
69	49	20		IN	-87.36	0.09	-8.28	-6.50	-19.35	-15.10	-4.72	1001.45
68	50	18		SN	-91.68	-0.03	-10.04	-9.39	-17.53	-16.21	-4.02	1004.99
67	51	16		SB	-88.05	-0.10	-4.97	-7.62	-14.22	-17.35	-1.86	1000.58
66	52	14		TE	-87.64	0.02	-6.42	-10.53	-10.60	-18.55	0.56	999.38
65	53	12		I	-81.26		-3.37	-8.82	-9.00	-19.92	0.80	992.22
64	54	10		XE	-77.92		-4.69	-11.90	-7.27	-21.07	1.39	988.09
63	55	8		CS	-68.40		-1.60	-9.96	-5.50	-22.25	1.97	977.80
62	56	6		BA	-62.22		-3.00	-13.08	-3.81	-23.33	2.58	970.84
60	58	2		CE	-40.96		-1.39	-14.11	-0.50	-25.71	3.50	948.01

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
82	37	45	119	RB	54.83		-21.08	-2.46	-46.00	-3.58	-19.71	876.72
81	38	43		SR	34.11		-22.39	-1.15	-43.44	-4.67	-18.24	896.66
80	39	41		Y	15.75		-18.73	-3.54	-41.09	-5.44	-16.66	914.23
79	40	39		ZR	-1.36		-19.87	-1.93	-38.58	-6.38	-15.09	930.57
78	41	37		CB	-16.24		-16.03	-4.48	-35.87	-7.15	-13.15	944.66
77	42	35		MO	-30.26		-17.71	-2.70	-33.71	-8.05	-11.89	957.90
76	43	33		TC	-42.60		-14.25	-5.38	-31.94	-8.86	-10.93	969.45
75	44	31		RU	-54.04		-16.05	-3.50	-30.28	-9.94	-10.34	980.12
74	45	29		RH	-63.68		-12.36	-6.46	-28.38	-10.76	-9.27	988.97
73	46	27		PD	-71.80		-13.79	-4.32	-26.13	-11.60	-7.86	996.31
72	47	25		AG	-78.63		-10.37	-7.30	-24.14	-12.71	-6.98	1002.35
71	48	23		CD	-83.99	0.08	-11.88	-5.43	-22.23	-13.76	-6.12	1006.93
70	49	21		IN	-87.64	-0.07	-8.30	-8.35	-20.16	-14.85	-5.14	1009.80
69	50	19		SN	-90.14	-0.07	-10.06	-6.52	-18.34	-15.91	-4.38	1011.51
68	51	17		SB	-89.39	0.09	-5.00	-9.41	-15.04	-17.03	-2.19	1009.99
67	52	15		TE	-87.21	-0.02	-6.44	-7.64	-11.42	-18.17	0.28	1007.02
66	53	13		I	-83.74		-3.39	-10.55	-9.81	-19.37	0.69	1002.77
65	54	11		XE	-78.69		-4.71	-8.84	-8.08	-20.74	1.05	996.93
64	55	9		CS	-72.25		-1.63	-11.92	-6.32	-21.88	1.67	989.72
63	56	7		BA	-64.13		-3.02	-9.98	-4.62	-23.06	2.18	980.82
61	58	3		CE	-43.95		-1.42	-11.06	-1.32	-25.18	3.38	959.07
84	36	48	120	KR	85.82		-25.64	-0.40	-48.88	1.06	-17.98	854.58
82	38	44		SR	39.03		-23.08	-3.15	-44.16	-4.30	-18.63	899.81
81	39	42		Y	21.98		-19.43	-1.85	-41.81	-5.39	-17.37	916.08
80	40	40		ZR	2.47		-20.57	-4.24	-39.30	-6.16	-15.63	934.80
79	41	38		CB	-10.80		-16.72	-2.62	-36.59	-7.10	-13.86	947.29
78	42	36		MO	-27.36		-18.41	-5.17	-34.43	-7.87	-12.47	963.07
77	43	34		TC	-37.92		-14.95	-3.39	-32.66	-8.77	-11.60	972.84
76	44	32		RU	-52.05		-16.75	-6.08	-31.00	-9.58	-10.74	986.20
75	45	30		RH	-59.81		-13.06	-4.20	-29.10	-10.66	-9.93	993.17
74	46	28		PD	-70.88		-14.49	-7.16	-26.85	-11.48	-8.49	1003.46
73	47	26		AG	-75.57		-11.07	-5.02	-24.86	-12.32	-7.35	1007.37
72	48	24		CD	-83.92		-12.58	-8.00	-22.95	-13.43	-6.55	1014.93
71	49	22		IN	-85.70	-0.00	-9.00	-6.13	-20.88	-14.48	-5.53	1015.93
70	50	20		SN	-91.11	-0.01	-10.76	-9.05	-19.06	-15.57	-4.80	1020.56
69	51	18		SB	-88.54	-0.13	-5.69	-7.22	-15.76	-16.63	-2.56	1017.21
68	52	16		TE	-89.24	0.16	-7.14	-10.11	-12.14	-17.75	-0.05	1017.13
67	53	14		I	-84.01	-0.01	-4.09	-8.34	-10.53	-18.89	0.41	1011.11
66	54	12		XE	-81.86		-5.41	-11.25	-8.80	-20.09	0.94	1008.18
65	55	10		CS	-73.72		-2.32	-9.54	-7.04	-21.46	1.34	999.26
64	56	8		BA	-68.68		-3.72	-12.62	-5.35	-22.60	1.88	993.44
63	57	6		LA	-57.47		-0.62	-10.68	-3.64	-23.79	2.40	981.44
62	58	4		CE	-49.68		-2.11	-13.80	-2.04	-24.87	2.93	972.88
60	60	0		ND	-25.33		-0.53	0.	1.06	0.	3.64	946.95
84	37	47	121	RB	71.35		-21.77	-0.39	-47.41	0.38	-17.33	876.35
82	39	43		Y	26.91		-19.42	-3.14	-42.50	-4.99	-17.79	919.22
81	40	41		ZR	8.71		-20.56	-1.84	-39.98	-6.07	-16.35	936.64
80	41	39		CB	-6.95		-16.71	-4.23	-37.28	-6.85	-14.43	951.51
79	42	37		MO	-21.90		-18.40	-2.61	-35.12	-7.79	-13.20	965.68
78	43	35		TC	-35.01		-14.94	-5.16	-33.34	-8.56	-12.20	978.01
77	44	33		RU	-47.36		-16.74	-3.38	-31.68	-9.46	-11.44	989.58
76	45	31		RH	-57.81		-13.05	-6.07	-29.79	-10.27	-10.35	999.24
75	46	29		PD	-67.00		-14.48	-4.19	-27.53	-11.34	-9.17	1007.65
74	47	27		AG	-74.65		-11.05	-7.15	-25.54	-12.17	-8.01	1014.52
73	48	25		CD	-80.86		-12.57	-5.01	-23.63	-13.01	-6.94	1019.94
72	49	23		IN	-85.62	-0.01	-8.99	-7.99	-21.57	-14.12	-5.98	1023.92
71	50	21		SN	-89.16	0.05	-10.75	-6.12	-19.75	-15.17	-5.22	1026.68
70	51	19		SB	-89.51	0.08	-5.68	-9.04	-16.45	-16.26	-3.00	1026.25
69	52	17		TE	-88.38	-0.08	-7.13	-7.21	-12.83	-17.32	-0.44	1024.34
68	53	15		I	-86.03	-0.08	-4.08	-10.10	-11.22	-18.43	0.05	1021.21
67	54	13		XE	-82.12	0.04	-5.40	-8.33	-9.49	-19.58	0.64	1016.51
66	55	11		CS	-76.89		-2.31	-11.24	-7.72	-20.78	1.20	1010.50
65	56	9		BA	-70.14		-3.71	-9.53	-6.03	-22.15	1.52	1002.97
64	57	7		LA	-62.01		-0.61	-12.61	-4.33	-23.29	2.08	994.05
63	58	5		CE	-52.28		-2.10	-10.67	-2.73	-24.47	2.50	983.54
61	60	1		ND	-29.00		-0.52	-11.75	0.37	0.	3.49	958.70

TABLE VI (*Continued*)

	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
86	36	50	122	KR	103.23		-26.47	-0.35	-50.39	1.27	-19.32	853.31
84	38	46		SR	54.72		-23.91	-1.23	-45.68	-0.45	-16.32	900.26
83	39	44		Y	34.92		-20.25	-0.06	-43.33	-3.20	-16.72	919.28
82	40	42		ZR	12.80		-21.39	-3.98	-40.81	-5.82	-16.82	940.62
81	41	40		CB	-1.55		-17.55	-2.68	-38.11	-6.90	-15.20	954.19
80	42	38		MO	-18.89		-19.23	-5.06	-35.95	-7.68	-13.81	970.75
79	43	36		TC	-30.39		-15.77	-3.45	-34.17	-8.62	-12.98	981.46
78	44	34		RU	-45.29		-17.57	-6.00	-32.51	-9.38	-12.08	995.58
77	45	32		RH	-53.96		-13.88	-4.22	-30.62	-10.29	-11.10	1003.46
76	46	30		PD	-65.83		-15.32	-6.91	-28.36	-11.10	-9.65	1014.56
75	47	28		AG	-71.60		-11.89	-5.03	-26.37	-12.17	-8.73	1019.54
74	48	26		CD	-80.77		-13.41	-7.98	-24.46	-12.99	-7.65	1027.93
73	49	24		IN	-83.39	-0.19	-9.83	-5.85	-22.40	-13.84	-6.42	1029.77
72	50	22		SN	-89.92	0.03	-11.59	-8.83	-20.58	-14.95	-5.71	1035.51
71	51	20		SB	-88.40	-0.08	-6.52	-6.96	-17.27	-16.00	-3.46	1033.21
70	52	18		TE	-90.19	0.10	-7.97	-9.88	-13.65	-17.09	-0.93	1034.22
69	53	16		I	-86.01	0.14	-4.92	-8.05	-12.05	-18.15	-0.38	1029.26
68	54	14		XE	-84.98		-6.24	-10.94	-10.32	-19.26	0.23	1027.45
67	55	12		CS	-77.98		-3.15	-9.16	-8.55	-20.40	0.86	1019.66
66	56	10		BA	-74.14		-4.55	-12.08	-6.86	-21.60	1.35	1015.04
65	57	8		LA	-64.30		-1.45	-10.37	-5.16	-22.98	1.68	1004.42
64	58	6		CE	-57.66		-2.94	-13.45	-3.55	-24.12	2.14	996.99
62	60	2		ND	-35.56		-1.36	-14.63	-0.46	-26.38	2.97	973.33
86	37	49	123	RB	87.87		-22.66	-0.41	-49.12	0.38	-18.73	875.97
84	39	45		Y	41.71		-20.30	-1.28	-44.22	-1.34	-15.54	920.56
83	40	43		ZR	20.76		-21.45	-0.11	-41.70	-4.09	-15.78	940.73
82	41	41		CB	2.49		-17.60	-4.03	-39.00	-6.71	-15.69	958.22
81	42	39		MO	-13.55		-19.29	-2.73	-36.84	-7.79	-14.61	973.47
80	43	37		TC	-27.43		-15.83	-5.11	-35.06	-8.57	-13.61	986.57
79	44	35		RU	-40.72		-17.62	-3.50	-33.40	-9.50	-12.89	999.08
78	45	33		RH	-51.94		-13.93	-6.05	-31.51	-10.27	-11.77	1009.51
77	46	31		PD	-62.03		-15.37	-4.27	-29.25	-11.18	-10.41	1018.83
76	47	29		AG	-70.49		-11.94	-6.96	-27.26	-11.98	-9.23	1026.50
75	48	27		CD	-77.77		-13.46	-5.08	-25.35	-13.06	-8.40	1033.00
74	49	25		IN	-83.36	-0.06	-9.88	-8.03	-23.29	-13.88	-7.16	1037.80
73	50	23		SN	-87.74	0.06	-11.64	-5.90	-21.47	-14.72	-6.18	1041.41
72	51	21		SB	-89.20	0.02	-6.57	-8.88	-18.16	-15.84	-3.99	1042.08
71	52	19		TE	-89.13	0.04	-8.02	-7.01	-14.54	-16.89	-1.42	1041.23
70	53	17		I	-87.87	-0.06	-4.97	-9.93	-12.94	-17.98	-0.90	1039.18
69	54	15		XE	-85.01	-0.00	-6.29	-8.10	-11.21	-19.04	-0.23	1035.55
68	55	13		CS	-80.90		-3.20	-10.99	-9.44	-20.15	0.42	1030.65
67	56	11		BA	-75.29		-4.60	-9.22	-7.75	-21.29	0.97	1024.26
66	57	9		LA	-68.36		-1.50	-12.13	-6.05	-22.49	1.47	1016.54
65	58	7		CE	-60.00		-2.99	-10.42	-4.44	-23.86	1.71	1007.41
63	60	3		ND	-39.05		-1.41	-11.56	-1.35	-26.19	2.48	984.89
88	36	52	124	KR	121.04		-27.07	-0.20	-51.88	1.66	-20.43	851.65
86	38	48		SR	70.64		-24.51	-0.95	-47.17	-0.22	-17.60	900.48
84	40	44		ZR	27.00		-22.00	-1.83	-42.30	-1.94	-14.46	942.56
83	41	42		CB	9.90		-18.15	-0.66	-39.60	-4.69	-14.50	958.88
82	42	40		MO	-10.06		-19.83	-4.58	-37.44	-7.31	-14.96	978.05
81	43	38		TC	-22.64		-16.38	-3.28	-35.66	-8.39	-14.27	989.85
80	44	36		RU	-38.32		-18.17	-5.66	-34.00	-9.17	-13.38	1004.75
79	45	34		RH	-47.92		-14.48	-4.05	-32.11	-10.11	-12.43	1013.57
78	46	32		PD	-60.56		-15.92	-6.60	-29.85	-10.87	-10.94	1025.43
77	47	30		AG	-67.24		-12.49	-4.82	-27.86	-11.78	-9.85	1031.32
76	48	28		CD	-77.21		-14.01	-7.51	-25.95	-12.58	-8.75	1040.51
75	49	26		IN	-80.91	-0.01	-10.43	-5.63	-23.89	-13.66	-7.76	1043.43
74	50	24		SN	-88.26	-0.02	-12.19	-8.58	-22.07	-14.48	-6.76	1049.99
73	51	22		SB	-87.58	0.01	-7.12	-6.45	-18.76	-15.33	-4.30	1048.53
72	52	20		TE	-90.48	0.02	-8.57	-9.43	-15.14	-16.44	-1.79	1050.65
71	53	18		I	-87.35	-0.02	-5.52	-7.56	-13.54	-17.49	-1.24	1046.74
70	54	16		XE	-87.42	0.03	-6.84	-10.48	-11.81	-18.58	-0.60	1046.02
69	55	14		CS	-81.47		-3.75	-8.65	-10.04	-19.64	0.11	1039.30
68	56	12		BA	-78.75		-5.15	-11.54	-8.35	-20.75	0.68	1035.80
67	57	10		LA	-70.05		-2.05	-9.76	-6.65	-21.89	1.24	1026.31
66	58	8		CE	-64.61		-3.54	-12.68	-5.04	-23.09	1.65	1020.09
65	59	6		PR	-53.25		-0.54	-10.97	-3.53	-24.46	1.79	1007.95
64	60	4		ND	-45.03		-1.96	-14.05	-1.95	-25.61	2.23	998.94
62	62	0		SM	-19.63		-0.31	0.	1.36	0.	3.27	971.98

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
88	37	51	125	RB	105.00		-23.33	-0.32	-50.40	0.99	-19.84	874.98
86	39	47		Y	56.95		-20.98	-1.08	-45.49	-0.90	-16.82	921.46
84	41	43		CB	16.01		-18.28	-1.96	-40.27	-2.62	-13.32	960.84
83	42	41		MO	-2.77		-19.96	-0.79	-38.11	-5.36	-13.90	978.84
82	43	39		TC	-19.27		-16.50	-4.71	-36.34	-7.98	-14.75	994.56
81	44	37		RU	-33.65		-18.30	-3.40	-34.68	-9.07	-14.17	1008.15
80	45	35		RH	-45.64		-14.61	-5.79	-32.78	-9.84	-13.05	1019.36
79	46	33		PD	-56.67		-16.04	-4.18	-30.53	-10.78	-11.73	1029.61
78	47	31		AG	-65.89		-12.62	-6.73	-28.54	-11.55	-10.51	1038.05
77	48	29		CD	-74.08		-14.13	-4.95	-26.63	-12.45	-9.51	1045.46
76	49	27		IN	-80.47		-10.55	-7.63	-24.56	-13.26	-8.25	1051.06
75	50	25		SN	-85.94	-0.01	-12.32	-5.75	-22.74	-14.34	-7.51	1055.75
74	51	23		SB	-88.22	0.06	-7.25	-8.71	-19.44	-15.16	-5.02	1057.24
73	52	21		TE	-88.98	0.05	-8.69	-6.57	-15.82	-16.00	-2.25	1057.23
72	53	19		I	-88.84	0.05	-5.64	-9.55	-14.21	-17.11	-1.75	1056.30
71	54	17		XE	-87.03	-0.05	-6.96	-7.69	-12.48	-18.16	-1.07	1053.71
70	55	15		CS	-84.00	-0.09	-3.88	-10.60	-10.72	-19.25	-0.40	1049.90
69	56	13		BA	-79.46		-5.27	-8.77	-9.02	-20.31	0.24	1044.57
68	57	11		LA	-73.64		-2.18	-11.66	-7.32	-21.43	0.82	1037.97
67	58	9		CE	-66.43		-3.67	-9.89	-5.72	-22.57	1.28	1029.98
66	59	7		PR	-57.98		-0.66	-12.80	-4.21	-23.77	1.60	1020.75
65	60	5		ND	-48.05		-2.09	-11.09	-2.62	-25.14	1.81	1010.03
63	62	1		SM	-23.79		-0.43	-12.23	0.68	0.	2.79	984.21
90	36	54	126	KR	138.63		-27.75	-0.54	-53.24	1.45	-22.14	850.20
88	38	50		SR	87.09		-25.19	-0.88	-48.52	0.31	-18.56	900.17
86	40	46		ZR	41.57		-22.68	-1.64	-43.66	-1.58	-15.58	944.14
85	41	44		CB	23.59		-18.83	-0.50	-40.95	-2.46	-13.76	961.33
84	42	42		MO	2.79		-20.52	-2.51	-38.79	-3.30	-12.44	981.35
83	43	40		TC	-12.54		-17.06	-1.34	-37.02	-6.05	-13.41	995.90
82	44	38		RU	-30.84		-18.85	-5.26	-35.36	-8.66	-14.37	1013.41
81	45	36		RH	-41.52		-15.16	-3.96	-33.46	-9.75	-13.56	1023.31
80	46	34		PD	-54.94		-16.60	-6.34	-31.21	-10.52	-12.08	1035.95
79	47	32		AG	-62.56		-13.17	-4.73	-29.22	-11.46	-11.03	1042.78
78	48	30		CD	-73.30		-14.69	-7.28	-27.31	-12.23	-9.89	1052.74
77	49	28		IN	-77.90		-11.11	-5.50	-25.24	-13.13	-8.72	1056.56
76	50	26		SN	-86.06	-0.03	-12.87	-8.19	-23.42	-13.94	-7.71	1063.93
75	51	24		SB	-86.45	-0.12	-7.80	-6.31	-20.12	-15.02	-5.48	1063.55
74	52	22		TE	-90.18	-0.12	-9.25	-9.26	-16.50	-15.84	-2.69	1066.49
73	53	20		I	-87.89	0.01	-6.20	-7.13	-14.89	-16.68	-1.92	1063.43
72	54	18		XE	-89.07	0.09	-7.52	-10.11	-13.16	-17.79	-1.30	1063.82
71	55	16		CS	-84.17	0.18	-4.43	-8.24	-11.40	-18.84	-0.59	1058.14
70	56	14		BA	-82.54		-5.83	-11.16	-9.71	-19.93	0.01	1055.73
69	57	12		LA	-74.90		-2.73	-9.33	-8.00	-20.99	0.66	1047.30
68	58	10		CE	-70.58		-4.22	-12.22	-6.40	-22.11	1.14	1042.20
67	59	8		PR	-60.36		-1.22	-10.45	-4.89	-23.25	1.52	1031.19
66	60	6		ND	-53.34		-2.64	-13.36	-3.30	-24.45	1.90	1023.39
64	62	2		SM	-30.45		-0.99	-14.73	-0.00	-26.96	2.69	998.94
90	37	53	127	RB	121.99		-23.93	-0.59	-51.68	0.85	-21.26	874.13
88	39	49		Y	72.80		-21.58	-0.92	-46.77	-0.29	-17.49	921.76
86	41	45		CB	29.98		-18.88	-1.68	-41.55	-2.18	-14.16	963.02
85	42	43		MO	10.31		-20.56	-0.54	-39.39	-3.06	-12.87	981.90
84	43	41		TC	-7.03		-17.10	-2.56	-37.62	-3.90	-11.94	998.45
83	44	39		RU	-24.15		-18.90	-1.39	-35.96	-6.65	-13.03	1014.80
82	45	37		RH	-38.76		-15.21	-5.31	-34.07	-9.27	-13.75	1028.62
81	46	35		PD	-50.88		-16.64	-4.00	-31.81	-10.35	-12.58	1039.96
80	47	33		AG	-60.88		-13.22	-6.39	-29.82	-11.12	-11.36	1049.17
79	48	31		CD	-70.00		-14.74	-4.78	-27.91	-12.06	-10.39	1057.52
78	49	29		IN	-77.16		-11.16	-7.33	-25.84	-12.83	-9.10	1063.89
77	50	27		SN	-83.53	0.07	-12.92	-5.55	-24.03	-13.74	-8.18	1069.48
76	51	25		SB	-86.62	0.08	-7.85	-8.23	-20.72	-14.54	-5.68	1071.78
75	52	23		TE	-88.46	-0.17	-9.30	-6.35	-17.10	-15.62	-3.14	1072.85
74	53	21		I	-89.13	-0.15	-6.24	-9.31	-15.49	-16.44	-2.36	1072.74
73	54	19		XE	-88.17	0.27	-7.57	-7.18	-13.76	-17.28	-1.47	1070.99
72	55	17		CS	-86.26	0.09	-4.48	-10.15	-12.00	-18.39	-0.81	1068.29
71	56	15		BA	-82.76	-0.18	-5.87	-8.29	-10.31	-19.45	-0.17	1064.01
70	57	13		LA	-78.03		-2.78	-11.20	-8.61	-20.53	0.44	1058.51
69	58	11		CE	-71.88		-4.27	-9.38	-7.00	-21.59	0.98	1051.57
68	59	9		PR	-64.55		-1.26	-12.26	-5.49	-22.71	1.38	1043.46
67	60	7		ND	-55.76		-2.69	-10.49	-3.90	-23.85	1.82	1033.88
65	62	3		SM	-34.07		-1.03	-11.69	-0.60	-26.42	2.55	1010.63

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
92	36	56	128	KR	156.51		-28.26	-0.15	-54.35	1.73	-23.21	848.47
90	38	52		SR	103.57		-25.70	-1.05	-49.63	0.34	-19.89	899.84
88	40	48		ZR	56.91		-23.18	-1.39	-44.77	-0.80	-16.16	944.94
86	42	44		MO	16.24		-21.02	-2.14	-39.90	-2.69	-13.18	984.04
85	43	42		TC	0.04		-17.57	-1.01	-38.13	-3.57	-12.29	999.46
84	44	40		RU	-19.10		-19.36	-3.02	-36.47	-4.41	-11.47	1017.82
83	45	38		RH	-32.54		-15.67	-1.85	-34.57	-7.16	-12.32	1030.47
82	46	36		PD	-48.58		-17.11	-5.77	-32.32	-9.77	-12.68	1045.73
81	47	34		AG	-57.27		-13.68	-4.47	-30.33	-10.86	-11.78	1053.64
80	48	32		CD	-68.79		-15.20	-6.85	-28.42	-11.63	-10.65	1064.37
79	49	30		IN	-74.33		-11.62	-5.24	-26.35	-12.57	-9.52	1069.14
78	50	28		SN	-83.25	0.15	-13.38	-7.79	-24.53	-13.34	-8.47	1077.27
77	51	26		SB	-84.55	0.15	-8.31	-6.01	-21.23	-14.24	-6.07	1077.79
76	52	24		TE	-89.09	-0.11	-9.76	-8.70	-17.61	-15.05	-3.25	1081.54
75	53	22		I	-87.88	-0.17	-6.71	-6.82	-16.00	-16.13	-2.72	1079.55
74	54	20		XE	-89.87	-0.02	-8.03	-9.77	-14.27	-16.95	-1.82	1080.76
73	55	18		CS	-85.82	0.10	-4.94	-7.64	-12.51	-17.79	-0.89	1075.93
72	56	16		BA	-85.30	-0.08	-6.34	-10.62	-10.82	-18.90	-0.31	1074.63
71	57	14		LA	-78.71		-3.24	-8.75	-9.11	-19.95	0.34	1067.25
70	58	12		CE	-75.48		-4.73	-11.67	-7.51	-21.04	0.85	1063.24
69	59	10		PR	-66.32		-1.73	-9.84	-6.00	-22.10	1.31	1053.30
68	60	8		ND	-60.41		-3.15	-12.73	-4.41	-23.22	1.77	1046.61
67	61	6		RM	-48.54		-0.08	-10.95	-2.76	-24.36	2.28	1033.96
66	62	4		SM	-39.87		-1.50	-13.87	-1.11	-25.56	2.73	1024.50
92	37	55	129	RB	139.33		-24.47	-0.22	-52.73	1.20	-22.19	872.94
90	39	51		Y	88.75		-22.12	-1.13	-47.82	-0.20	-18.68	921.95
88	41	47		CB	44.78		-19.41	-1.46	-42.60	-1.34	-14.60	964.36
86	43	43		TC	5.89		-17.64	-2.22	-38.66	-3.23	-12.55	1001.68
85	44	41		RU	-12.11		-19.44	-1.08	-37.00	-4.10	-11.76	1018.90
84	45	39		RH	-27.56		-15.75	-3.10	-35.11	-4.94	-10.71	1033.57
83	46	37		PD	-42.43		-17.18	-1.92	-32.85	-7.69	-11.21	1047.65
82	47	35		AG	-55.04		-13.76	-5.84	-30.86	-10.31	-11.83	1059.48
81	48	33		CD	-65.25		-15.27	-4.54	-28.96	-11.39	-11.01	1068.91
80	49	31		IN	-73.19		-11.69	-6.93	-26.89	-12.17	-9.72	1076.06
79	50	29		SN	-80.50		-13.45	-5.32	-25.07	-13.11	-8.84	1082.59
78	51	27		SB	-84.35	0.17	-8.39	-7.87	-21.77	-13.88	-6.30	1085.66
77	52	25		TE	-87.10	-0.08	-9.83	-6.08	-18.15	-14.78	-3.59	1087.63
76	53	23		I	-88.58	-0.08	-6.78	-8.77	-16.54	-15.59	-2.79	1088.32
75	54	21		XE	-88.69	-0.00	-8.10	-6.89	-14.81	-16.66	-2.13	1087.66
74	55	19		CS	-87.60	-0.01	-5.02	-9.85	-13.04	-17.49	-1.19	1085.78
73	56	17		BA	-84.94	0.20	-6.41	-7.71	-11.35	-18.33	-0.34	1082.34
72	57	15		LA	-81.33	-0.19	-3.31	-10.69	-9.65	-19.44	0.25	1077.95
71	58	13		CE	-76.23		-4.81	-8.82	-8.05	-20.49	0.80	1072.06
70	59	11		PR	-69.99		-1.80	-11.74	-6.53	-21.58	1.23	1065.04
69	60	9		ND	-62.25		-3.22	-9.91	-4.95	-22.64	1.75	1056.52
68	61	7		RM	-53.27		-0.15	-12.80	-3.30	-23.76	2.29	1046.76
67	62	5		SM	-42.82		-1.57	-11.03	-1.65	-24.90	2.80	1035.53
92	38	54	130	SR	120.35		-26.27	-0.71	-50.74	0.63	-20.71	899.21
90	40	50		ZR	72.28		-23.75	-1.62	-45.87	-0.77	-17.24	945.71
88	42	46		MO	30.48		-21.59	-1.95	-41.01	-1.91	-13.51	985.95
87	43	44		TC	13.52		-18.13	-0.45	-39.23	-2.66	-12.50	1002.13
86	44	42		RU	-6.75		-19.93	-2.71	-37.57	-3.79	-11.96	1021.61
85	45	40		RH	-21.06		-16.24	-1.57	-35.68	-4.67	-10.95	1035.14
84	46	38		PD	-37.94		-17.67	-3.59	-33.42	-5.51	-9.53	1051.24
83	47	36		AG	-49.39		-14.25	-2.42	-31.43	-8.26	-10.29	1061.90
82	48	34		CD	-63.52		-15.76	-6.34	-29.52	-10.88	-11.00	1075.25
81	49	32		IN	-70.15		-12.18	-5.03	-27.46	-11.96	-10.02	1081.10
80	50	30		SN	-79.84		-13.95	-7.42	-25.64	-12.74	-8.97	1090.01
79	51	28		SB	-82.09	-0.15	-8.88	-5.81	-22.33	-13.67	-6.61	1091.47
78	52	26		TE	-87.39	-0.05	-10.33	-8.36	-18.71	-14.44	-3.75	1095.98
77	53	24		I	-87.08	-0.15	-7.27	-6.58	-17.11	-15.35	-3.05	1094.90
76	54	22		XE	-89.88	-0.00	-8.59	-9.26	-15.38	-16.15	-2.13	1096.92
75	55	20		CS	-86.91	-0.02	-5.51	-7.38	-13.61	-17.23	-1.44	1093.16
74	56	18		BA	-87.21	0.12	-6.90	-10.34	-11.92	-18.05	-0.57	1092.68
73	57	16		LA	-81.46	0.27	-3.81	-8.20	-10.22	-18.89	0.29	1086.15
72	58	14		CE	-79.34		-5.30	-11.18	-8.61	-20.01	0.78	1083.24
71	59	12		PR	-71.23		-2.29	-9.32	-7.10	-21.06	1.24	1074.35
70	60	10		ND	-66.41		-3.72	-12.23	-5.52	-22.15	1.74	1068.75
69	61	8		RM	-55.61		-0.64	-10.40	-3.87	-23.21	2.33	1057.16
68	62	6		SM	-48.05		-2.06	-13.29	-2.21	-24.32	2.86	1048.82
66	64	2		GD	-24.30		-0.40	-14.43	0.99	-26.66	3.73	1023.51

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
92	39	53	131	Y	105.04		-22.59	-0.70	-48.86	0.16	-19.37	921.80
90	41	49		CB	59.68		-19.89	-1.60	-43.64	-1.24	-15.54	965.60
88	43	45		TC	19.65		-18.11	-1.93	-39.70	-2.38	-12.75	1004.06
87	44	43		RU	0.89		-19.91	-0.43	-38.04	-3.14	-11.85	1022.04
86	45	41		RH	-15.68		-16.22	-2.69	-36.15	-4.27	-11.08	1037.83
85	46	39		PD	-31.43		-17.65	-1.56	-33.89	-5.14	-9.70	1052.79
84	47	37		AG	-44.89		-14.23	-3.57	-31.90	-5.98	-8.55	1065.47
83	48	35		CD	-57.85		-15.75	-2.40	-30.00	-8.73	-9.39	1077.65
82	49	33		IN	-68.40		-12.17	-6.32	-27.93	-11.35	-9.94	1087.42
81	50	31		SN	-76.79		-13.93	-5.02	-26.11	-12.43	-9.21	1095.02
80	51	29		SB	-81.42		-8.86	-7.40	-22.81	-13.21	-6.68	1098.87
79	52	27		TE	-85.10	0.06	-10.31	-5.79	-19.19	-14.15	-4.00	1101.78
78	53	25		I	-87.35	0.09	-7.26	-8.34	-17.58	-14.92	-3.16	1103.24
77	54	23		XE	-88.37	0.04	-8.58	-6.56	-15.85	-15.82	-2.34	1103.48
76	55	21		CS	-88.08	-0.03	-5.49	-9.25	-14.08	-16.63	-1.38	1102.41
75	56	19		BA	-86.51	0.38	-6.89	-7.37	-12.39	-17.71	-0.76	1100.05
74	57	17		LA	-83.71	0.22	-3.79	-10.32	-10.69	-18.53	0.12	1096.47
73	58	15		CE	-79.45	-0.74	-5.28	-8.19	-9.09	-19.37	0.88	1091.43
72	59	13		PR	-74.32		-2.27	-11.16	-7.57	-20.48	1.28	1085.52
71	60	11		ND	-67.64		-3.70	-9.30	-5.99	-21.53	1.82	1078.05
70	61	9		RM	-59.75		-0.63	-12.22	-4.34	-22.62	2.38	1069.38
69	62	7		SM	-50.36		-2.04	-10.39	-2.69	-23.68	2.97	1059.21
67	64	3		GD	-27.73		-0.38	-11.50	0.52	-25.94	3.92	1035.01
94	38	56	132	SR	137.75		-26.90	-0.36	-51.85	1.26	-21.18	897.95
92	40	52		ZR	87.95		-24.39	-1.35	-46.98	-0.48	-18.05	946.19
90	42	48		MO	44.75		-22.23	-2.25	-42.11	-1.88	-14.58	987.82
89	43	46		TC	27.45		-18.77	-0.27	-40.34	-2.21	-13.14	1004.33
88	44	44		RU	6.38		-20.56	-2.59	-38.68	-3.02	-12.29	1024.62
87	45	42		RH	-8.69		-16.88	-1.08	-36.79	-3.77	-11.16	1038.91
86	46	40		PD	-26.70		-18.31	-3.35	-34.53	-4.90	-10.03	1056.14
85	47	38		AG	-39.02		-14.88	-2.21	-32.54	-5.78	-8.91	1067.68
84	48	36		CD	-54.00		-16.40	-4.22	-30.63	-6.62	-7.85	1081.87
83	49	34		IN	-63.38		-12.82	-3.05	-28.57	-9.37	-8.53	1090.47
82	50	32		SN	-75.69		-14.58	-6.97	-26.75	-11.99	-9.33	1102.00
81	51	30		SB	-79.01		-9.51	-5.67	-23.44	-13.07	-7.11	1104.54
80	52	28		TE	-85.09	0.12	-10.96	-8.05	-19.82	-13.85	-4.26	1109.83
79	53	26		I	-85.72	-0.01	-7.91	-6.44	-18.22	-14.78	-3.59	1109.68
78	54	24		XE	-89.29	-0.02	-9.23	-8.99	-16.49	-15.55	-2.63	1112.47
77	55	22		CS	-87.22	-0.03	-6.14	-7.21	-14.72	-16.46	-1.77	1109.62
76	56	20		BA	-88.33	0.05	-7.54	-9.90	-13.03	-17.26	-0.89	1109.95
75	57	18		LA	-83.66	-0.10	-4.44	-8.02	-11.33	-18.34	-0.26	1104.49
74	58	16		CE	-82.36	0.00	-5.93	-10.97	-9.72	-19.16	0.52	1102.41
73	59	14		PR	-75.09		-2.93	-8.84	-8.21	-20.00	1.19	1094.36
72	60	12		ND	-71.39		-4.35	-11.82	-6.63	-21.12	1.66	1089.87
71	61	10		RM	-61.63		-1.28	-9.95	-4.98	-22.17	2.26	1079.33
70	62	8		SM	-55.16		-2.70	-12.87	-3.32	-23.26	2.83	1072.08
68	64	4		GD	-33.59		-1.03	-13.93	-0.12	-25.43	3.86	1048.94
94	39	55	133	Y	121.65		-23.39	-0.50	-50.29	0.47	-20.10	921.33
92	41	51		CB	74.55		-20.68	-1.49	-45.07	-1.27	-16.62	966.87
90	43	47		TC	33.13		-18.91	-2.39	-41.13	-2.67	-14.08	1006.73
89	44	45		RU	14.03		-20.71	-0.42	-39.47	-3.00	-12.75	1025.04
88	45	43		RH	-3.35		-17.02	-2.73	-37.58	-3.81	-11.66	1041.64
87	46	41		PD	-19.85		-18.45	-1.22	-35.32	-4.57	-10.17	1057.36
86	47	39		AG	-34.44		-15.03	-3.49	-33.33	-5.70	-9.30	1071.17
85	48	37		CD	-48.27		-16.54	-2.35	-31.43	-6.57	-8.27	1084.22
84	49	35		IN	-59.67		-12.96	-4.36	-29.36	-7.41	-7.05	1094.83
83	50	33		SN	-70.81		-14.72	-3.19	-27.54	-10.16	-7.98	1105.19
82	51	31		SB	-78.05		-9.66	-7.11	-24.24	-12.78	-7.29	1111.65
81	52	29		TE	-82.83		-11.10	-5.81	-20.62	-13.86	-4.75	1115.64
80	53	27		I	-85.85	0.08	-8.05	-8.20	-19.01	-14.64	-3.92	1117.88
79	54	25		XE	-87.81	-0.07	-9.37	-6.58	-17.28	-15.58	-3.13	1119.06
78	55	23		CS	-88.29	-0.13	-6.28	-9.13	-15.51	-16.35	-2.13	1118.75
77	56	21		BA	-87.61	0.06	-7.68	-7.35	-13.82	-17.25	-1.35	1117.30
76	57	19		LA	-85.63	-0.16	-4.58	-10.04	-12.12	-18.06	-0.45	1114.53
75	58	17		CE	-82.45	0.22	-6.08	-8.16	-10.52	-19.13	0.07	1110.57
74	59	15		PR	-78.14		-3.07	-11.12	-9.00	-19.96	0.77	1105.47
73	60	13		ND	-72.30		-4.49	-8.98	-7.42	-20.80	1.51	1098.85
72	61	11		RM	-65.52		-1.42	-11.96	-5.77	-21.91	2.05	1091.29
71	62	9		SM	-57.18		-2.84	-10.09	-4.12	-22.96	2.65	1082.17
69	64	5		GD	-36.70		-1.17	-11.18	-0.91	-25.11	3.70	1060.12

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
94	40	54	134	ZR	104.18		-24.77	-0.74	-48.15	0.09	-18.60	946.10
92	42	50		MO	59.24		-22.61	-1.73	-43.29	-1.65	-15.47	989.47
91	43	48		TC	41.04		-19.15	-0.16	-41.51	-2.56	-14.60	1006.89
90	44	46		RU	19.47		-20.94	-2.63	-39.85	-3.05	-13.43	1027.67
89	45	44		RH	4.07		-17.25	-0.65	-37.96	-3.38	-11.87	1042.29
88	46	42		PD	-14.75		-18.69	-2.97	-35.70	-4.19	-10.42	1060.33
87	47	40		AG	-27.83		-15.26	-1.46	-33.71	-4.95	-9.19	1072.63
86	48	38		CD	-43.93		-16.78	-3.73	-31.80	-6.07	-8.41	1087.94
85	49	36		IN	-54.18		-13.20	-2.59	-29.74	-6.95	-7.22	1097.42
84	50	34		SN	-67.34		-14.96	-4.60	-27.92	-7.79	-6.24	1109.79
83	51	32		SB	-73.41		-9.89	-3.43	-24.61	-10.54	-5.69	1115.08
82	52	30		TE	-82.10		-11.34	-7.35	-20.99	-13.16	-4.68	1122.99
81	53	28		I	-83.82	0.15	-8.29	-6.05	-19.39	-14.24	-4.16	1123.93
80	54	26		XE	-88.17	-0.05	-9.61	-8.43	-17.66	-15.02	-3.21	1127.49
79	55	24		CS	-87.04	-0.25	-6.52	-6.82	-15.89	-15.96	-2.38	1125.58
78	56	22		BA	-88.92	-0.06	-7.92	-9.37	-14.20	-16.72	-1.46	1126.67
77	57	20		LA	-85.15	-0.07	-4.82	-7.59	-12.50	-17.63	-0.66	1122.12
76	58	18		CE	-84.65	0.29	-6.31	-10.28	-10.90	-18.44	0.14	1120.84
75	59	16		PR	-78.46		-3.31	-8.40	-9.38	-19.51	0.57	1113.87
74	60	14		ND	-75.58		-4.73	-11.35	-7.80	-20.34	1.34	1110.20
73	61	12		RM	-66.66		-1.66	-9.22	-6.15	-21.18	2.14	1100.51
72	62	10		SM	-61.30		-3.08	-12.20	-4.50	-22.29	2.68	1094.37
71	63	8		EU	-50.01		-0.12	-10.33	-2.96	-23.34	3.17	1082.29
70	64	6		GD	-41.87		-1.41	-13.25	-1.29	-24.43	3.75	1073.37
96	39	57	135	Y	139.03		-24.06	-0.25	-51.34	1.23	-20.76	920.10
94	41	53		CB	90.11		-21.35	-1.17	-46.12	-0.58	-17.35	967.45
92	43	49		TC	46.95		-19.58	-2.16	-42.18	-2.32	-15.16	1009.05
91	44	47		RU	26.95		-21.37	-0.59	-40.52	-3.23	-14.40	1028.27
90	45	45		RH	9.08		-17.68	-3.06	-38.63	-3.72	-13.00	1045.36
89	46	43		PD	-7.76		-19.12	-1.08	-36.37	-4.05	-11.08	1061.41
88	47	41		AG	-23.15		-15.69	-3.40	-34.38	-4.86	-9.89	1076.02
87	48	39		CD	-37.75		-17.21	-1.89	-32.47	-5.62	-8.75	1089.83
86	49	37		IN	-50.27		-13.63	-4.16	-30.41	-6.74	-7.81	1101.57
85	50	35		SN	-62.29		-15.39	-3.02	-28.59	-7.62	-6.86	1112.81
84	51	33		SB	-70.37		-10.32	-5.03	-25.28	-8.46	-4.40	1120.11
83	52	31		TE	-77.89		-11.77	-3.86	-21.66	-11.21	-3.53	1126.85
82	53	29		I	-83.53	0.28	-8.72	-7.78	-20.06	-13.83	-4.54	1131.71
81	54	27		XE	-86.57	0.03	-10.04	-6.48	-18.33	-14.91	-3.90	1133.97
80	55	25		CS	-87.83	-0.06	-6.95	-8.86	-16.56	-15.69	-2.90	1134.44
79	56	23		BA	-88.10	-0.12	-8.35	-7.25	-14.87	-16.63	-2.15	1133.93
78	57	21		LA	-86.88	-0.15	-5.25	-9.80	-13.17	-17.39	-1.22	1131.92
77	58	19		CE	-84.60	0.03	-6.74	-8.02	-11.56	-18.30	-0.52	1128.86
76	59	17		PR	-81.10		-3.74	-10.71	-10.05	-19.11	0.19	1124.58
75	60	15		ND	-76.34		-5.16	-8.83	-8.47	-20.18	0.69	1119.03
74	61	13		RM	-70.38		-2.09	-11.78	-6.82	-21.00	1.52	1112.29
73	62	11		SM	-62.88		-3.51	-9.65	-5.16	-21.85	2.33	1104.02
72	63	9		EU	-54.56		-0.55	-12.63	-3.62	-22.96	2.76	1094.91
71	64	7		GD	-44.56		-1.84	-10.76	-1.96	-24.01	3.38	1084.13
69	66	3		DY	-20.83		-0.26	-11.85	1.28	-26.16	4.47	1058.84
96	40	56	136	ZR	120.96		-25.36	-0.41	-49.41	0.64	-19.22	945.46
94	42	52		MO	74.21		-23.20	-1.33	-44.55	-1.17	-16.17	990.65
93	43	50		TC	55.02		-19.74	-0.00	-42.78	-2.16	-15.38	1009.05
92	44	48		RU	32.70		-21.54	-2.32	-41.11	-2.91	-14.47	1030.59
91	45	46		RH	16.39		-17.85	-0.76	-39.22	-3.82	-13.48	1046.11
90	46	44		PD	-2.91		-19.28	-3.23	-36.96	-4.31	-11.72	1064.64
89	47	42		AG	-16.33		-15.86	-1.25	-34.97	-4.64	-10.06	1077.27
88	48	40		CD	-33.24		-17.37	-3.56	-33.07	-5.45	-8.96	1093.39
87	49	38		IN	-44.25		-13.79	-2.05	-31.00	-6.21	-7.65	1103.63
86	50	36		SN	-58.53		-15.55	-4.32	-29.18	-7.34	-6.96	1117.13
85	51	34		SB	-65.48		-10.49	-3.18	-25.88	-8.21	-4.53	1123.29
84	52	32		TE	-75.02		-11.93	-5.20	-22.26	-9.06	-1.75	1132.05
83	53	30		I	-79.49	-0.07	-8.88	-4.02	-20.65	-11.80	-2.90	1135.73
82	54	28		XE	-86.45	-0.03	-10.20	-7.94	-18.92	-14.42	-3.78	1141.91
81	55	26		CS	-86.40	-0.09	-7.12	-6.64	-17.15	-15.51	-3.10	1141.08
80	56	24		BA	-89.05	0.09	-8.51	-9.03	-15.46	-16.28	-2.19	1142.95
79	57	22		LA	-86.22	0.05	-5.41	-7.42	-13.76	-17.22	-1.42	1139.34
78	58	20		CE	-86.50	0.05	-6.91	-9.97	-12.16	-17.99	-0.59	1138.83
77	59	18		PR	-81.21		-3.90	-8.18	-10.64	-18.89	0.02	1132.76
76	60	16		ND	-79.13		-5.32	-10.87	-9.06	-19.70	0.80	1129.90
75	61	14		RM	-71.30		-2.25	-8.99	-7.41	-20.78	1.37	1121.28
74	62	12		SM	-66.76		-3.67	-11.95	-5.76	-21.60	2.20	1115.96
73	63	10		EU	-56.31		-0.71	-9.81	-4.22	-22.44	2.90	1104.73
72	64	8		GD	-49.28		-2.00	-12.79	-2.55	-23.55	3.45	1096.92
70	66	4		DY	-26.60		-0.43	-13.84	0.69	-25.69	4.56	1072.68

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
96	41	55	137	CB	106.30		-21.95	-0.84	-47.31	0.04	-17.78	967.41
94	43	51		TC	61.32		-20.17	-1.77	-43.37	-1.77	-15.65	1010.82
93	44	49		RU	40.34		-21.97	-0.44	-41.71	-2.76	-14.98	1031.02
92	45	47		RH	21.71		-18.28	-2.75	-39.82	-3.51	-13.84	1048.87
91	46	45		PD	3.97		-19.71	-1.19	-37.56	-4.41	-12.49	1065.82
90	47	43		AG	-11.91		-16.29	-3.66	-35.57	-4.90	-10.99	1080.93
89	48	41		CD	-26.84		-17.80	-1.68	-33.66	-5.24	-9.42	1095.07
88	49	39		IN	-40.17		-14.22	-3.99	-31.60	-6.04	-8.16	1107.62
87	50	37		SN	-52.95		-15.98	-2.49	-29.78	-6.80	-7.10	1119.61
86	51	35		SB	-62.16		-10.92	-4.75	-26.47	-7.93	-4.92	1128.04
85	52	33		TE	-70.56		-12.36	-3.61	-22.85	-8.81	-2.17	1135.66
84	53	31		I	-77.04		-9.31	-5.63	-21.25	-9.65	-1.41	1141.36
83	54	29		XE	-82.83	-0.02	-10.63	-4.45	-19.52	-12.40	-2.43	1146.37
82	55	27		CS	-86.71	0.14	-7.55	-8.38	-17.75	-15.02	-3.28	1149.46
81	56	25		BA	-88.05	-0.03	-8.94	-7.07	-16.06	-16.10	-2.67	1150.03
80	57	23		LA	-87.61	-0.09	-5.85	-9.46	-14.36	-16.88	-1.75	1148.80
79	58	21		CE	-86.27	0.05	-7.34	-7.85	-12.75	-17.81	-1.08	1146.68
78	59	19		PR	-83.54	-0.04	-4.33	-10.40	-11.24	-18.58	-0.34	1143.16
77	60	17		ND	-79.68		-5.76	-8.62	-9.66	-19.49	0.34	1138.52
76	61	15		RM	-74.53		-2.68	-11.30	-8.01	-20.29	1.18	1132.59
75	62	13		SM	-68.11		-4.10	-9.42	-6.35	-21.37	1.76	1125.39
74	63	11		EU	-60.61		-1.14	-12.38	-4.81	-22.19	2.48	1117.11
73	64	9		GD	-51.45		-2.44	-10.24	-3.15	-23.03	3.30	1107.16
71	66	5		DY	-29.89		-0.86	-11.36	0.10	-25.20	4.38	1084.03
96	42	54	138	MO	89.73		-23.86	-1.07	-45.80	-0.62	-16.87	991.26
94	44	50		RU	46.41		-22.20	-1.99	-42.37	-2.43	-15.25	1033.02
93	45	48		RH	29.12		-18.51	-0.66	-40.48	-3.42	-14.34	1049.53
92	46	46		PD	9.06		-19.94	-2.98	-38.22	-4.17	-12.84	1068.81
91	47	44		AG	-5.26		-16.52	-1.42	-36.23	-5.07	-11.75	1082.34
90	48	42		CD	-22.66		-18.03	-3.89	-34.32	-5.57	-10.34	1098.96
89	49	40		IN	-34.01		-14.45	-1.91	-32.26	-5.90	-8.60	1109.52
88	50	38		SN	-49.09		-16.21	-4.22	-30.44	-6.71	-7.59	1123.83
87	51	36		SB	-56.80		-11.15	-2.71	-27.13	-7.46	-5.04	1130.76
86	52	34		TE	-67.47		-12.59	-4.98	-23.51	-8.59	-2.55	1140.64
85	53	32		I	-72.81		-9.54	-3.84	-21.91	-9.47	-1.82	1145.20
84	54	30		XE	-80.61	-0.32	-10.86	-5.86	-20.18	-10.31	-0.93	1152.22
83	55	28		CS	-83.32	0.34	-7.78	-4.68	-18.41	-13.06	-1.92	1154.14
82	56	26		BA	-88.59	-0.10	-9.17	-8.60	-16.72	-15.68	-2.84	1158.63
81	57	24		LA	-86.84	-0.13	-6.07	-7.30	-15.02	-16.76	-2.23	1156.10
80	58	22		CE	-87.89	-0.17	-7.57	-9.69	-13.41	-17.54	-1.40	1156.37
79	59	20		PR	-83.54	0.39	-4.56	-8.08	-11.90	-18.47	-0.82	1151.24
78	60	18		ND	-82.23		-5.98	-10.63	-10.32	-19.24	-0.01	1149.15
77	61	16		RM	-75.30		-2.91	-8.84	-8.67	-20.15	0.74	1141.43
76	62	14		SM	-71.57		-4.33	-11.53	-7.01	-20.95	1.58	1136.92
75	63	12		EU	-62.19		-1.37	-9.65	-5.47	-22.03	2.05	1126.76
74	64	10		GD	-55.99		-2.66	-12.61	-3.81	-22.85	2.89	1119.77
72	66	6		DY	-35.27		-1.09	-13.45	-0.56	-24.81	4.18	1097.48
98	41	57	139	CB	123.53		-22.22	-0.03	-48.24	1.09	-17.92	966.32
96	43	53		TC	76.58		-20.44	-1.12	-44.30	-0.89	-15.96	1011.71
94	45	49		RH	35.15		-18.55	-2.04	-40.75	-2.70	-14.22	1051.57
93	46	47		PD	16.42		-19.98	-0.71	-38.49	-3.69	-12.95	1069.52
92	47	45		AG	-0.21		-16.56	-3.03	-36.50	-4.44	-11.72	1085.37
91	48	43		CD	-16.05		-18.08	-1.46	-34.59	-5.35	-10.71	1100.42
90	49	41		IN	-29.87		-14.50	-3.93	-32.53	-5.84	-9.14	1113.46
89	50	39		SN	-42.97		-16.26	-1.95	-30.71	-6.17	-7.65	1125.78
88	51	37		SB	-53.00		-11.19	-4.26	-27.40	-6.98	-5.15	1135.02
87	52	35		TE	-62.15		-12.64	-2.76	-23.78	-7.74	-2.29	1143.40
86	53	33		I	-69.76		-9.59	-5.02	-22.18	-8.86	-1.81	1150.22
85	54	31		XE	-76.43	0.10	-10.91	-3.89	-20.45	-9.74	-0.96	1156.11
84	55	29		CS	-81.15	-0.02	-7.82	-5.90	-18.68	-10.58	-0.04	1160.04
83	56	27		BA	-85.24	-0.11	-9.22	-4.73	-16.99	-13.33	-1.09	1163.36
82	57	25		LA	-87.42	0.01	-6.12	-8.65	-15.29	-15.95	-2.01	1164.75
81	58	23		CE	-87.16	-0.00	-7.61	-7.34	-13.69	-17.03	-1.49	1163.71
80	59	21		PR	-85.20	-0.04	-4.60	-9.73	-12.17	-17.81	-0.75	1160.97
79	60	19		ND	-82.28	0.08	-6.03	-8.12	-10.59	-18.75	-0.11	1157.27
78	61	17		RM	-77.90		-2.96	-10.67	-8.94	-19.51	0.78	1152.10
77	62	15		SM	-72.39		-4.37	-8.89	-7.29	-20.42	1.52	1145.80
76	63	13		EU	-65.70		-1.42	-11.58	-5.75	-21.23	2.26	1138.33
75	64	11		GD	-57.61		-2.71	-9.70	-4.08	-22.30	2.85	1129.47
73	66	7		DY	-37.71		-1.13	-10.52	-0.84	-23.97	4.43	1108.00

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
98	42	56	140	MO	106.59		-24.23	-0.35	-46.45	0.72	-16.79	990.55
96	44	52		RU	61.30		-22.57	-1.44	-43.01	-1.26	-15.33	1034.27
95	45	50		RH	43.08		-18.88	-0.14	-41.12	-2.18	-14.36	1051.71
94	46	48		PD	22.13		-20.31	-2.36	-38.86	-3.07	-12.99	1071.88
93	47	46		AG	6.83		-16.89	-1.03	-36.87	-4.06	-11.99	1086.40
92	48	44		CD	-11.33		-18.40	-3.35	-34.96	-4.81	-10.84	1103.77
91	49	42		IN	-23.58		-14.82	-1.78	-32.90	-5.71	-9.67	1115.24
90	50	40		SN	-39.16		-16.58	-4.25	-31.08	-6.21	-8.35	1130.04
89	51	38		SB	-47.20		-11.51	-2.27	-27.77	-6.54	-5.37	1137.30
88	52	36		TE	-58.67		-12.96	-4.59	-24.15	-7.35	-2.56	1147.98
87	53	34		I	-64.77		-9.91	-3.08	-22.55	-8.10	-1.71	1153.30
86	54	32		XE	-73.70		-11.23	-5.35	-20.82	-9.23	-1.11	1161.45
85	55	30		CS	-77.28	-0.07	-8.14	-4.21	-19.05	-10.11	-0.22	1164.25
84	56	28		BA	-83.40	-0.09	-9.54	-6.22	-17.36	-10.95	0.63	1169.58
83	57	26		LA	-84.40	-0.04	-6.44	-5.05	-15.66	-13.70	-0.42	1169.80
82	58	24		CE	-88.06	0.06	-7.93	-8.97	-14.05	-16.32	-1.43	1172.68
81	59	22		PR	-84.80	-0.04	-4.93	-7.67	-12.54	-17.40	-1.00	1168.64
80	60	20		ND	-84.27	0.19	-6.35	-10.06	-10.96	-18.18	-0.20	1167.32
79	61	18		RM	-78.27		-3.28	-8.44	-9.31	-19.11	0.51	1160.55
78	62	16		SM	-75.31		-4.70	-10.99	-7.65	-19.88	1.40	1156.80
77	63	14		EU	-66.84		-1.74	-9.21	-6.11	-20.79	2.04	1147.54
76	64	12		GD	-61.44		-3.03	-11.90	-4.45	-21.59	2.89	1141.36
75	65	10		TB	-50.40		-0.07	-10.02	-2.78	-22.67	3.48	1129.54
74	66	8		DY	-42.62		-1.45	-12.98	-1.20	-23.49	4.24	1120.97
98	43	55	141	TC	92.67		-21.21	-0.79	-45.43	-0.04	-16.05	1011.75
96	45	51		RH	49.27		-19.32	-1.88	-41.88	-2.02	-14.47	1053.59
95	46	49		PD	29.62		-20.75	-0.58	-39.62	-2.94	-13.14	1072.46
94	47	47		AG	12.10		-17.33	-2.80	-37.63	-3.83	-12.04	1089.20
93	48	45		CD	-4.73		-18.84	-1.47	-35.73	-4.82	-11.12	1105.24
92	49	43		IN	-19.30		-15.26	-3.79	-33.66	-5.57	-9.81	1119.03
91	50	41		SN	-33.31		-17.02	-2.22	-31.84	-6.48	-8.89	1132.26
90	51	39		SB	-43.82		-11.95	-4.69	-28.54	-6.97	-6.08	1141.99
89	52	37		TE	-53.31		-13.40	-2.71	-24.92	-7.30	-2.79	1150.70
88	53	35		I	-61.73		-10.35	-5.03	-23.31	-8.11	-1.99	1158.33
87	54	33		XE	-69.15		-11.67	-3.52	-21.58	-8.87	-1.02	1164.97
86	55	31		CS	-75.00		-8.58	-5.79	-19.81	-10.00	-0.38	1170.04
85	56	29		BA	-79.97	0.09	-9.98	-4.65	-18.12	-10.87	0.43	1174.23
84	57	27		LA	-82.99	0.07	-6.88	-6.66	-16.42	-11.71	1.29	1176.46
83	58	25		CE	-85.48	0.01	-8.37	-5.49	-14.82	-14.46	0.15	1178.17
82	59	23		PR	-86.14	-0.07	-5.37	-9.41	-13.30	-17.08	-0.96	1178.05
81	60	21		ND	-84.30	-0.03	-6.79	-8.11	-11.72	-18.16	-0.46	1175.43
80	61	19		RM	-80.70	-0.05	-3.72	-10.50	-10.07	-18.94	0.42	1171.04
79	62	17		SM	-76.12		-5.14	-8.88	-8.42	-19.88	1.13	1165.68
78	63	15		EU	-70.20		-2.18	-11.43	-6.88	-20.65	1.90	1158.98
77	64	13		GD	-63.02		-3.47	-9.65	-5.21	-21.55	2.66	1151.02
76	65	11		TB	-54.66		-0.51	-12.34	-3.55	-22.36	3.52	1141.88
75	66	9		DY	-45.00		-1.89	-10.46	-1.97	-23.43	4.03	1131.43
73	68	5		ER	-21.65		-0.08	-11.28	1.48	-25.10	5.81	1106.52
100	42	58	142	MO	123.77		-25.08	-0.13	-48.06	1.03	-17.12	989.52
98	44	54		RU	76.55		-23.42	-1.20	-44.62	-0.89	-15.61	1035.17
97	45	52		RH	57.24		-19.73	-0.11	-42.73	-1.98	-14.81	1053.70
96	46	50		PD	35.40		-21.16	-2.29	-40.47	-2.87	-13.43	1074.75
95	47	48		AG	19.18		-17.74	-0.99	-38.48	-3.79	-12.37	1090.19
94	48	46		CD	0.13		-19.25	-3.21	-36.58	-4.68	-11.35	1108.45
93	49	44		IN	-13.11		-15.67	-1.88	-34.51	-5.67	-10.27	1120.91
92	50	42		SN	-29.44		-17.43	-4.20	-32.69	-6.42	-9.20	1136.46
91	51	40		SB	-38.38		-12.36	-2.63	-29.39	-7.33	-6.80	1144.62
90	52	38		TE	-50.34		-13.81	-5.10	-25.77	-7.82	-3.68	1155.80
89	53	36		I	-56.78		-10.76	-3.12	-24.16	-8.15	-2.40	1161.46
88	54	34		XE	-66.52		-12.08	-5.44	-22.43	-8.96	-1.48	1170.41
87	55	32		CS	-70.86		-8.99	-3.93	-20.66	-9.72	-0.47	1173.97
86	56	30		BA	-78.10	-0.18	-10.39	-6.20	-18.97	-10.85	0.09	1180.43
85	57	28		LA	-79.98	0.14	-7.29	-5.06	-17.27	-11.72	0.92	1181.52
84	58	26		CE	-84.48	0.15	-8.78	-7.07	-15.67	-12.56	1.68	1185.25
83	59	24		PR	-83.97	-0.12	-5.78	-5.90	-14.15	-15.31	0.44	1183.95
82	60	22		ND	-86.05	-0.04	-7.20	-9.82	-12.57	-17.93	-0.59	1185.25
81	61	20		RM	-81.14	0.07	-4.13	-8.52	-10.92	-19.01	-0.03	1179.56
80	62	18		SM	-78.96		-5.55	-10.91	-9.27	-19.79	0.85	1176.59
79	63	16		EU	-71.42		-2.59	-9.29	-7.73	-20.73	1.45	1168.27
78	64	14		GD	-66.79		-3.88	-11.84	-6.06	-21.50	2.35	1162.86
77	65	12		TB	-56.65		-0.92	-10.06	-4.40	-22.40	3.11	1151.94
76	66	10		DY	-49.68		-2.30	-12.75	-2.82	-23.21	3.88	1144.18
74	68	6		ER	-27.41		-0.49	-13.83	0.63	-25.11	5.43	1120.35

TABLE VI (*Conclusion*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
100	43	57	143	TC	109.28		-21.77	-0.29	-46.85	0.46	-16.68	1011.29
98	45	53		RH	63.95		-19.88	-1.36	-43.30	-1.46	-15.05	1055.05
97	46	51		PD	43.21		-21.31	-0.26	-41.04	-2.55	-13.88	1075.01
96	47	49		AG	24.80		-17.89	-2.45	-39.05	-3.44	-12.77	1092.64
95	48	47		CD	7.06		-19.41	-1.15	-37.14	-4.36	-11.79	1109.60
94	49	45		IN	-8.40		-15.83	-3.37	-35.08	-5.25	-10.61	1124.28
93	50	43		SN	-23.40		-17.59	-2.04	-33.26	-6.24	-9.78	1138.50
92	51	41		SB	-34.67		-12.52	-4.36	-29.95	-6.99	-7.23	1148.98
91	52	39		TE	-45.06		-13.97	-2.79	-26.33	-7.89	-4.51	1158.59
90	53	37		I	-53.97		-10.92	-5.26	-24.73	-8.39	-3.40	1166.72
89	54	35		XE	-61.73		-12.24	-3.28	-23.00	-8.72	-2.00	1173.69
88	55	33		CS	-68.38		-9.15	-5.59	-21.23	-9.53	-1.04	1179.56
87	56	31		BA	-74.11		-10.55	-4.09	-19.54	-10.29	-0.11	1184.51
86	57	29		LA	-78.26	0.11	-7.45	-6.35	-17.84	-11.41	0.46	1187.87
85	58	27		CE	-81.63	0.04	-8.94	-5.22	-16.23	-12.29	1.19	1190.46
84	59	25		PR	-83.13	-0.02	-5.93	-7.23	-14.72	-13.13	1.86	1191.18
83	60	23		ND	-84.04	-0.00	-7.36	-6.06	-13.14	-15.88	0.70	1191.31
82	61	21		RM	-83.05	-0.14	-4.29	-9.98	-11.49	-18.50	-0.27	1189.54
81	62	19		SM	-79.56	0.03	-5.70	-8.68	-9.83	-19.58	0.30	1185.26
80	63	17		EU	-74.41		-2.75	-11.06	-8.29	-20.36	1.06	1179.33
79	64	15		GD	-68.17		-4.04	-9.45	-6.63	-21.30	1.79	1172.31
78	65	13		TB	-60.58		-1.08	-12.00	-4.96	-22.06	2.69	1163.94
77	66	11		DY	-51.83		-2.46	-10.22	-3.38	-22.97	3.36	1154.40
75	68	7		ER	-30.36		-0.65	-11.03	0.06	-24.85	4.92	1131.37
100	44	56	144	RU	92.43		-24.13	-0.85	-45.91	-0.26	-16.58	1035.43
98	46	52		PD	49.37		-21.88	-1.92	-41.76	-2.18	-14.36	1076.93
97	47	50		AG	32.05		-18.45	-0.83	-39.77	-3.27	-13.46	1093.46
96	48	48		CD	12.12		-19.97	-3.01	-37.86	-4.16	-12.44	1112.61
95	49	46		IN	-2.04		-16.39	-1.71	-35.80	-5.08	-11.29	1125.99
94	50	44		SN	-19.26		-18.15	-3.93	-33.98	-5.97	-10.36	1142.43
93	51	42		SB	-29.20		-13.08	-2.60	-30.67	-6.96	-8.05	1151.58
92	52	40		TE	-41.91		-14.53	-4.92	-27.05	-7.71	-5.18	1163.51
91	53	38		I	-49.25		-11.48	-3.35	-25.45	-8.61	-4.48	1170.07
90	54	36		XE	-59.48		-12.80	-5.82	-23.72	-9.11	-3.24	1179.52
89	55	34		CS	-64.15		-9.71	-3.84	-21.95	-9.44	-1.81	1183.41
88	56	32		BA	-72.20		-11.11	-6.16	-20.26	-10.25	-0.92	1190.67
87	57	30		LA	-74.84	0.05	-8.01	-4.65	-18.56	-11.00	0.02	1192.52
86	58	28		CE	-80.47	0.02	-9.50	-6.92	-16.95	-12.13	0.50	1197.38
85	59	26		PR	-80.84	-0.03	-6.50	-5.78	-15.44	-13.01	1.14	1196.96
84	60	24		ND	-83.76	0.04	-7.92	-7.79	-13.86	-13.85	1.88	1199.10
83	61	22		RM	-81.60	-0.10	-4.85	-6.62	-12.21	-16.60	0.78	1196.16
82	62	20		SM	-82.03	-0.05	-6.27	-10.54	-10.55	-19.22	-0.19	1195.80
81	63	18		EU	-75.58	0.08	-3.31	-9.24	-9.01	-20.30	0.27	1188.57
80	64	16		GD	-71.73		-4.60	-11.62	-7.35	-21.08	1.16	1183.94
79	65	14		TB	-62.53		-1.64	-10.01	-5.68	-22.01	1.89	1173.95
78	66	12		DY	-56.32		-3.02	-12.56	-4.10	-22.78	2.70	1166.96
77	67	10		HO	-44.55		-0.01	-10.78	-2.47	-23.69	3.42	1154.41
76	68	8		ER	-35.76		-1.21	-13.47	-0.66	-24.49	4.43	1144.84
100	45	55	145	RH	79.29		-20.43	-0.84	-44.57	-0.81	-15.81	1055.86
98	47	51		AG	38.21		-18.44	-1.90	-40.32	-2.73	-13.48	1095.37
97	48	49		CD	19.38		-19.96	-0.81	-38.41	-3.82	-12.67	1113.42
96	49	47		IN	3.04		-16.38	-2.99	-36.34	-4.71	-11.49	1128.98
95	50	45		SN	-12.89		-18.14	-1.70	-34.53	-5.63	-10.59	1144.13
94	51	43		SB	-25.05		-13.07	-3.92	-31.22	-6.52	-8.17	1155.50
93	52	41		TE	-36.43		-14.52	-2.59	-27.60	-7.51	-5.54	1166.10
92	53	39		I	-46.09		-11.46	-4.91	-25.99	-8.26	-4.69	1174.98
91	54	37		XE	-54.75		-12.79	-3.34	-24.26	-9.16	-3.86	1182.86
90	55	35		CS	-61.89		-9.70	-5.81	-22.50	-9.65	-2.59	1189.22
89	56	33		BA	-67.96		-11.09	-3.83	-20.81	-9.99	-1.23	1194.50
88	57	31		LA	-72.91		-8.00	-6.14	-19.11	-10.79	-0.34	1198.67
87	58	29		CE	-77.04	0.02	-9.49	-4.64	-17.50	-11.55	0.51	1202.01
86	59	27		PR	-79.67	-0.00	-6.48	-6.90	-15.99	-12.68	0.90	1203.86
85	60	25		ND	-81.45	0.01	-7.91	-5.76	-14.40	-13.56	1.60	1204.87
84	61	23		RM	-81.31	0.02	-4.83	-7.78	-12.76	-14.40	2.41	1203.94
83	62	21		SM	-80.56	0.11	-6.25	-6.61	-11.10	-17.15	1.32	1202.41
82	63	19		EU	-78.04	-0.16	-3.29	-10.53	-9.56	-19.76	0.24	1199.10
81	64	17		GD	-72.88		-4.59	-9.22	-7.90	-20.85	0.82	1193.16
80	65	15		TB	-66.07		-1.63	-11.61	-6.23	-21.62	1.71	1185.56
79	66	13		DY	-58.25		-3.01	-10.00	-4.65	-22.56	2.35	1176.96
77	68	9		ER	-38.46		-1.20	-10.77	-1.21	-24.24	4.12	1155.61

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
102	44	58	146	RU	109.21		-24.76	-0.50	-47.09	0.63	-16.98	1034.79
100	46	54		PD	64.07		-22.51	-1.48	-42.94	-1.44	-14.90	1078.36
99	47	52		AG	45.69		-19.08	-0.60	-40.95	-2.50	-13.97	1095.97
98	48	50		CD	24.90		-20.60	-2.55	-39.04	-3.36	-12.92	1115.97
97	49	48		IN	9.65		-17.02	-1.45	-36.97	-4.45	-11.95	1130.44
96	50	46		SN	-8.46		-18.78	-3.64	-35.15	-5.33	-11.02	1147.76
95	51	44		SB	-19.31		-13.71	-2.34	-31.85	-6.26	-8.63	1157.84
94	52	42		TE	-32.92		-15.16	-4.56	-28.23	-7.15	-5.90	1170.66
93	53	40		I	-41.25		-12.11	-3.23	-26.62	-8.14	-5.29	1178.21
92	54	38		XE	-52.23		-13.43	-5.55	-24.89	-8.89	-4.31	1188.41
91	55	36		CS	-57.80		-10.34	-3.98	-23.13	-9.79	-3.45	1193.20
90	56	34		BA	-66.34		-11.74	-6.45	-21.44	-10.28	-2.25	1200.95
89	57	32		LA	-69.31		-8.64	-4.47	-19.74	-10.62	-0.88	1203.14
88	58	30		CE	-75.75	0.01	-10.13	-6.79	-18.13	-11.42	-0.08	1208.80
87	59	28		PR	-76.88	-0.12	-7.13	-5.28	-16.62	-12.18	0.67	1209.14
86	60	26		ND	-80.93	0.03	-8.55	-7.55	-15.03	-13.31	1.13	1212.41
85	61	24		RM	-79.64	-0.13	-5.48	-6.41	-13.38	-14.19	1.90	1210.34
84	62	22		SM	-80.91	0.13	-6.90	-8.42	-11.73	-15.03	2.71	1210.83
83	63	20		EU	-77.21	-0.03	-3.94	-7.25	-10.19	-17.78	1.51	1206.35
82	64	18		GD	-75.98	0.10	-5.23	-11.17	-8.53	-20.39	0.55	1204.33
81	65	16		TB	-67.86		-2.27	-9.87	-6.86	-21.48	1.14	1195.43
80	66	14		DY	-62.43		-3.65	-12.25	-5.28	-22.25	1.94	1189.22
79	67	12		HO	-51.60		-0.64	-10.64	-3.65	-23.19	2.63	1177.60
78	68	10		ER	-43.58		-1.84	-13.19	-1.84	-23.96	3.68	1168.80
102	45	57	147	RH	95.40		-21.10	-0.52	-45.86	-0.04	-16.31	1055.89
100	47	53		AG	52.25		-19.11	-1.51	-41.62	-2.10	-14.13	1097.47
99	48	51		CD	32.35		-20.63	-0.62	-39.71	-3.17	-13.28	1116.59
98	49	49		IN	15.15		-17.04	-2.57	-37.64	-4.03	-12.08	1133.01
97	50	47		SN	-1.87		-18.81	-1.48	-35.82	-5.12	-11.35	1149.24
96	51	45		SB	-14.91		-13.74	-3.66	-32.52	-6.00	-8.93	1161.50
95	52	43		TE	-27.21		-15.19	-2.37	-28.90	-6.93	-6.23	1173.03
94	53	41		I	-37.76		-12.13	-4.59	-27.29	-7.82	-5.52	1182.79
93	54	39		XE	-47.41		-13.46	-3.26	-25.56	-8.81	-4.77	1191.66
92	55	37		CS	-55.31		-10.37	-5.58	-23.80	-9.56	-3.76	1198.77
91	56	35		BA	-62.28		-11.76	-4.01	-22.11	-10.46	-2.97	1204.96
90	57	33		LA	-67.72		-8.67	-6.48	-20.40	-10.95	-1.76	1209.62
89	58	31		CE	-72.18		-10.16	-4.50	-18.80	-11.29	-0.49	1213.30
88	59	29		PR	-75.62	0.01	-7.15	-6.81	-17.29	-12.09	0.22	1215.95
87	60	27		ND	-78.16	0.01	-8.58	-5.31	-15.70	-12.85	1.04	1217.72
86	61	25		RM	-79.14	-0.07	-5.50	-7.57	-14.05	-13.98	1.56	1217.92
85	62	23		SM	-79.28	0.02	-6.92	-6.43	-12.40	-14.86	2.34	1217.27
84	63	21		EU	-77.59	-0.09	-3.96	-8.45	-10.86	-15.70	3.04	1214.80
83	64	19		GD	-75.18	0.12	-5.26	-7.28	-9.20	-18.45	1.95	1211.61
82	65	17		TB	-70.99		-2.30	-11.20	-7.53	-21.06	1.00	1206.63
81	66	15		DY	-64.25		-3.68	-9.89	-5.95	-22.15	1.50	1199.11
80	67	13		HO	-55.81		-0.66	-12.28	-4.32	-22.92	2.35	1189.88
79	68	11		ER	-46.17		-1.87	-10.67	-2.51	-23.86	3.23	1179.47
102	46	56	148	PD	79.60		-23.09	-1.08	-44.19	-0.62	-15.26	1078.98
101	47	54		AG	60.23		-19.66	-0.09	-42.20	-1.60	-14.25	1097.57
100	48	52		CD	38.36		-21.18	-2.06	-40.29	-2.69	-13.43	1118.65
99	49	50		IN	22.04		-17.60	-1.18	-38.22	-3.75	-12.43	1134.19
98	50	48		SN	3.08		-19.36	-3.13	-36.41	-4.61	-11.47	1152.37
97	51	46		SB	-8.87		-14.29	-2.04	-33.10	-5.70	-9.25	1163.54
96	52	44		TE	-23.36		-15.74	-4.22	-29.48	-6.58	-6.52	1177.24
95	53	42		I	-32.61		-12.69	-2.92	-27.87	-7.51	-5.84	1185.71
94	54	40		XE	-44.48		-14.01	-5.14	-26.14	-8.40	-4.99	1196.80
93	55	38		CS	-51.05		-10.92	-3.81	-24.38	-9.39	-4.22	1202.58
92	56	36		BA	-60.34		-12.32	-6.13	-22.69	-10.14	-3.28	1211.09
91	57	34		LA	-64.21		-9.22	-4.56	-20.99	-11.04	-2.48	1214.18
90	58	32		CE	-71.14		-10.71	-7.03	-19.38	-11.53	-1.37	1220.33
89	59	30		PR	-72.60	0.13	-7.71	-5.05	-17.87	-11.87	-0.19	1221.01
88	60	28		ND	-77.46	-0.02	-9.13	-7.37	-16.28	-12.67	0.59	1225.09
87	61	26		RM	-76.93	-0.01	-6.06	-5.86	-14.64	-13.43	1.48	1223.78
86	62	24		SM	-79.33	0.04	-7.48	-8.13	-12.98	-14.56	2.01	1225.39
85	63	22		EU	-76.51	-0.23	-4.52	-6.99	-11.44	-15.44	2.67	1221.79
84	64	20		GD	-76.11	0.17	-5.81	-9.00	-9.78	-16.28	3.49	1220.61
83	65	18		TB	-70.75	-0.08	-2.85	-7.83	-8.11	-19.03	2.41	1214.46
82	66	16		DY	-67.93		-4.23	-11.75	-6.53	-21.64	1.37	1210.86
81	67	14		HO	-58.18		-1.22	-10.45	-4.90	-22.73	1.92	1200.33
80	68	12		ER	-50.94		-2.42	-12.84	-3.09	-23.50	2.96	1192.30
78	70	8		YB	-28.53		-0.47	-13.77	0.47	-25.21	4.80	1168.33

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
102	47	55	149	AG	67.31		-19.58	-1.00	-42.67	-1.09	-14.41	1098.56
101	48	53		CD	46.42		-21.10	-0.01	-40.76	-2.08	-13.49	1118.67
100	49	51		IN	28.13		-17.52	-1.98	-38.70	-3.16	-12.51	1136.17
99	50	49		SN	10.05		-19.28	-1.10	-36.88	-4.23	-11.75	1153.47
98	51	47		SB	-3.85		-14.21	-3.05	-33.57	-5.08	-9.31	1166.59
97	52	45		TE	-17.24		-15.66	-1.95	-29.95	-6.17	-6.78	1179.20
96	53	43		I	-28.68		-12.61	-4.14	-28.35	-7.06	-6.06	1189.85
95	54	41		XE	-39.25		-13.93	-2.84	-26.62	-7.98	-5.25	1199.64
94	55	39		CS	-48.03		-10.84	-5.06	-24.85	-8.87	-4.37	1207.64
93	56	37		BA	-55.99		-12.24	-3.73	-23.16	-9.86	-3.67	1214.82
92	57	35		LA	-62.19		-9.14	-6.05	-21.46	-10.61	-2.72	1220.23
91	58	33		CE	-67.55		-10.63	-4.48	-19.86	-11.52	-2.02	1224.82
90	59	31		PR	-71.48		-7.63	-6.95	-18.34	-12.01	-1.00	1227.96
89	60	29		ND	-74.36	0.04	-9.05	-4.97	-16.76	-12.34	0.25	1230.06
88	61	27		RM	-76.15	-0.07	-5.98	-7.29	-15.11	-13.15	1.09	1231.06
87	62	25		SM	-77.04	0.10	-7.40	-5.78	-13.46	-13.91	1.99	1231.17
86	63	23		EU	-76.48	-0.09	-4.44	-8.05	-11.92	-15.03	2.40	1229.83
85	64	21		GD	-74.95	0.22	-5.73	-6.91	-10.25	-15.91	3.19	1227.52
84	65	19		TB	-71.60	-0.20	-2.77	-8.92	-8.58	-16.75	4.01	1223.38
83	66	17		DY	-67.61		-4.15	-7.75	-7.01	-19.50	2.84	1218.61
82	67	15		HO	-61.78		-1.14	-11.67	-5.37	-22.12	1.86	1212.00
81	68	13		ER	-53.23		-2.34	-10.37	-3.56	-23.20	2.59	1202.67
79	70	9		YB	-31.60		-0.39	-11.14	-0.01	-24.92	4.43	1179.47
104	46	58	150	PD	96.17		-23.69	-0.51	-45.26	0.43	-15.47	1078.55
102	48	54		CD	52.82		-21.78	-1.68	-41.36	-1.69	-13.68	1120.34
101	49	52		IN	35.51		-18.20	-0.69	-39.30	-2.67	-12.60	1136.86
100	50	50		SN	15.46		-19.96	-2.66	-37.48	-3.76	-11.87	1156.13
99	51	48		SB	2.45		-14.89	-1.78	-34.17	-4.82	-9.63	1168.36
98	52	46		TE	-12.90		-16.34	-3.73	-30.55	-5.68	-6.87	1182.93
97	53	44		I	-23.24		-13.29	-2.63	-28.95	-6.77	-6.35	1192.49
96	54	42		XE	-36.00		-14.61	-4.82	-27.22	-7.66	-5.51	1204.46
95	55	40		CS	-43.48		-11.52	-3.52	-25.45	-8.58	-4.66	1211.16
94	56	38		BA	-53.66		-12.92	-5.74	-23.76	-9.47	-3.86	1220.56
93	57	36		LA	-58.53		-9.82	-4.41	-22.06	-10.46	-3.15	1224.64
92	58	34		CE	-66.21		-11.31	-6.73	-20.45	-11.21	-2.30	1231.55
91	59	32		PR	-68.57		-8.31	-5.16	-18.94	-12.11	-1.69	1233.12
90	60	30		ND	-73.92	-0.26	-9.73	-7.63	-17.36	-12.61	-0.59	1237.69
89	61	28		RM	-73.73	-0.10	-6.66	-5.65	-15.71	-12.94	0.72	1236.72
88	62	26		SM	-76.94	0.12	-8.08	-7.97	-14.05	-13.75	1.57	1239.14
87	63	24		EU	-74.87	-0.06	-5.12	-6.46	-12.51	-14.51	2.35	1236.29
86	64	22		GD	-75.60	0.22	-6.41	-8.73	-10.85	-15.63	2.89	1236.24
85	65	20		TB	-71.11	-0.08	-3.45	-7.59	-9.18	-16.51	3.68	1230.97
84	66	18		DY	-69.14	0.17	-4.83	-9.60	-7.61	-17.35	4.41	1228.21
83	67	16		HO	-62.14		-1.82	-8.43	-5.97	-20.10	3.30	1220.43
82	68	14		ER	-57.51		-3.02	-12.35	-4.16	-22.72	2.49	1215.02
81	69	12		TM	-46.16		-0.21	-11.05	-2.55	-23.80	3.02	1202.88
80	70	10		YB	-36.96		-1.07	-13.43	-0.60	-24.58	4.19	1192.91
104	47	57	151	AG	83.17		-20.29	-0.54	-43.98	-0.28	-14.66	1098.85
102	49	53		IN	41.88		-18.23	-1.71	-40.01	-2.40	-12.80	1138.57
101	50	51		SN	22.81		-19.99	-0.72	-38.19	-3.38	-11.97	1156.85
100	51	49		SB	7.83		-14.92	-2.69	-34.88	-4.47	-9.75	1171.05
99	52	47		TE	-6.63		-16.37	-1.81	-31.26	-5.53	-7.19	1184.73
98	53	45		I	-18.93		-13.32	-3.76	-29.66	-6.39	-6.44	1196.24
97	54	43		XE	-30.59		-14.64	-2.66	-27.93	-7.48	-5.80	1207.12
96	55	41		CS	-40.26		-11.55	-4.85	-26.16	-8.37	-4.92	1216.01
95	56	39		BA	-49.14		-12.95	-3.55	-24.47	-9.29	-4.15	1224.11
94	57	37		LA	-56.22		-9.85	-5.77	-22.77	-10.18	-3.34	1230.41
93	58	35		CE	-62.58		-11.34	-4.44	-21.16	-11.17	-2.73	1235.99
92	59	33		PR	-67.26		-8.34	-6.76	-19.65	-11.92	-1.97	1239.88
91	60	31		ND	-71.04	-0.04	-9.76	-5.19	-18.07	-12.82	-1.29	1242.88
90	61	29		RM	-73.32	0.08	-6.69	-7.66	-16.42	-13.32	-0.13	1244.38
89	62	27		SM	-74.55	0.05	-8.11	-5.68	-14.76	-13.65	1.19	1244.82
88	63	25		EU	-74.79	-0.12	-5.15	-8.00	-13.22	-14.46	1.92	1244.29
87	64	23		GD	-74.02	0.25	-6.44	-6.49	-11.56	-15.22	2.83	1242.73
86	65	21		TB	-71.80	-0.22	-3.48	-8.76	-9.89	-16.34	3.37	1239.72
85	66	19		DY	-68.69	0.01	-4.86	-7.62	-8.31	-17.22	4.07	1235.83
84	67	17		HO	-63.70		-1.85	-9.63	-6.68	-18.06	4.86	1230.06
83	68	15		ER	-57.90		-3.05	-8.46	-4.87	-20.81	3.93	1223.48
82	69	13		TM	-50.46		-0.24	-12.38	-3.26	-23.43	2.92	1215.26
81	70	11		YB	-39.97		-1.10	-11.08	-1.31	-24.51	3.78	1203.99

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
104	48	56	152	CD	68.04		-22.41	-1.14	-42.71	-0.92	-13.98	1121.26
103	49	54		IN	49.57		-18.83	-0.38	-40.64	-2.09	-13.09	1138.95
102	50	52		SN	28.57		-20.59	-2.31	-38.82	-3.03	-12.21	1159.16
101	51	50		SB	14.57		-15.53	-1.33	-35.52	-4.02	-9.90	1172.38
100	52	48		TE	-1.86		-16.97	-3.30	-31.90	-5.10	-7.36	1188.03
99	53	46		I	-13.26		-13.92	-2.41	-30.29	-6.17	-6.82	1198.65
98	54	44		XE	-26.88		-15.24	-4.36	-28.56	-7.03	-5.95	1211.49
97	55	42		CS	-35.46		-12.16	-3.27	-26.79	-8.12	-5.27	1219.28
96	56	40		BA	-46.52		-13.55	-5.45	-25.10	-9.00	-4.46	1229.56
95	57	38		LA	-52.31		-10.45	-4.15	-23.40	-9.92	-3.69	1234.57
94	58	36		CE	-60.88		-11.95	-6.37	-21.80	-10.81	-2.97	1242.36
93	59	34		PR	-64.23		-8.94	-5.04	-20.28	-11.80	-2.45	1244.93
92	60	32		ND	-70.33		-10.36	-7.36	-18.70	-12.55	-1.62	1250.25
91	61	30		RM	-71.05	0.20	-7.29	-5.80	-17.05	-13.46	-0.87	1250.17
90	62	28		SM	-74.74	0.00	-8.71	-8.27	-15.40	-13.95	0.29	1253.09
89	63	26		EU	-73.01	-0.12	-5.75	-6.29	-13.86	-14.28	1.50	1250.57
88	64	24		GD	-74.55	0.16	-7.04	-8.60	-12.19	-15.09	2.36	1251.33
87	65	22		TB	-70.82	-0.29	-4.09	-7.09	-10.53	-15.85	3.26	1246.82
86	66	20		DY	-69.97	0.14	-5.47	-9.36	-8.95	-16.98	3.71	1245.19
85	67	18		HO	-63.85	-0.10	-2.45	-8.22	-7.32	-17.85	4.47	1238.28
84	68	16		ER	-60.06		-3.65	-10.24	-5.50	-18.70	5.44	1233.72
83	69	14		TM	-51.46		-0.84	-9.06	-3.89	-21.44	4.30	1224.33
82	70	12		YB	-44.88		-1.71	-12.98	-1.95	-24.06	3.63	1216.97
106	47	59	153	AG	99.91		-21.03	-0.02	-45.35	0.61	-15.08	1098.24
104	49	55		IN	56.37		-18.96	-1.27	-41.38	-1.65	-13.36	1140.22
103	50	53		SN	36.13		-20.73	-0.51	-39.56	-2.82	-12.71	1159.68
102	51	51		SB	20.20		-15.66	-2.44	-36.25	-3.77	-10.36	1174.82
101	52	49		TE	4.76		-17.11	-1.46	-32.63	-4.76	-7.72	1189.49
100	53	47		I	-8.62		-14.05	-3.43	-31.03	-5.84	-7.20	1202.08
99	54	45		XE	-21.35		-15.38	-2.54	-29.30	-6.90	-6.53	1214.03
98	55	43		CS	-31.88		-12.29	-4.49	-27.53	-7.76	-5.63	1223.77
97	56	41		BA	-41.85		-13.68	-3.40	-25.84	-8.85	-5.03	1232.96
96	57	39		LA	-49.82		-10.59	-5.58	-24.14	-9.74	-4.21	1240.15
95	58	37		CE	-57.10		-12.08	-4.29	-22.53	-10.66	-3.53	1246.65
94	59	35		PR	-62.67		-9.07	-6.51	-21.02	-11.55	-2.90	1251.43
93	60	33		ND	-67.44		-10.50	-5.18	-19.44	-12.54	-2.31	1255.42
92	61	31		RM	-70.47	0.29	-7.42	-7.50	-17.79	-13.29	-1.41	1257.67
91	62	29		SM	-72.60	-0.04	-8.84	-5.93	-16.13	-14.20	-0.66	1259.02
90	63	27		EU	-73.34	0.02	-5.88	-8.40	-14.59	-14.69	0.39	1258.97
89	64	25		GD	-72.90	0.22	-7.18	-6.42	-12.93	-15.02	1.72	1257.75
88	65	23		TB	-71.48	-0.21	-4.22	-8.73	-11.26	-15.83	2.58	1255.55
87	66	21		DY	-69.13	0.04	-5.60	-7.23	-9.69	-16.59	3.40	1252.42
86	67	19		HO	-65.27	-0.32	-2.59	-9.49	-8.05	-17.71	3.90	1247.78
85	68	17		ER	-60.35		-3.79	-8.35	-6.24	-18.59	4.84	1242.07
84	69	15		TM	-53.75		-0.98	-10.37	-4.63	-19.43	5.60	1234.69
83	70	13		YB	-46.01		-1.84	-9.20	-2.68	-22.18	4.80	1226.17
106	48	58	154	CD	84.12		-23.08	-0.56	-44.11	-0.07	-14.48	1121.32
105	49	56		IN	64.39		-19.50	-0.05	-42.05	-1.32	-13.67	1140.27
104	50	54		SN	42.39		-21.27	-1.81	-40.23	-2.33	-12.85	1161.49
103	51	52		SB	27.22		-16.20	-1.05	-36.93	-3.49	-10.72	1175.88
102	52	50		TE	9.85		-17.65	-2.98	-33.31	-4.44	-8.04	1192.47
101	53	48		I	-2.55		-14.59	-2.00	-31.70	-5.43	-7.42	1204.08
100	54	46		XE	-17.25		-15.91	-3.97	-29.97	-6.51	-6.77	1218.00
99	55	44		CS	-26.89		-12.83	-3.08	-28.20	-7.58	-6.07	1226.86
98	56	42		BA	-38.81		-14.22	-5.03	-26.51	-8.43	-5.24	1238.00
97	57	40		LA	-45.69		-11.13	-3.94	-24.81	-9.52	-4.63	1244.09
96	58	38		CE	-55.15		-12.62	-6.12	-23.21	-10.41	-3.91	1252.77
95	59	36		PR	-59.42		-9.61	-4.83	-21.69	-11.33	-3.32	1256.26
94	60	34		ND	-66.41		-11.04	-7.05	-20.11	-12.22	-2.63	1262.47
93	61	32		RM	-68.11		-7.96	-5.72	-18.46	-13.21	-1.97	1263.39
92	62	30		SM	-72.56	-0.17	-9.38	-8.04	-16.81	-13.96	-1.07	1267.05
91	63	28		EU	-71.73	-0.06	-6.42	-6.47	-15.27	-14.87	-0.43	1265.44
90	64	26		GD	-73.77	-0.11	-7.72	-8.94	-13.60	-15.36	0.74	1266.69
89	65	24		TB	-70.37	-0.12	-4.76	-6.96	-11.94	-15.69	2.08	1262.51
88	66	22		DY	-70.33	0.13	-6.14	-9.27	-10.36	-16.50	2.85	1261.69
87	67	20		HO	-64.96	-0.00	-3.12	-7.77	-8.72	-17.26	3.72	1255.54
86	68	18		ER	-62.31	0.32	-4.33	-10.03	-6.91	-18.39	4.41	1252.10
85	69	16		TM	-54.57		-1.52	-8.89	-5.30	-19.26	5.14	1243.59
84	70	14		YB	-48.84		-2.38	-10.91	-3.36	-20.10	6.24	1237.07
82	72	10		HF	-29.72		-0.26	-13.66	0.59	-25.47	4.82	1216.38

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
106	49	57	155	IN	71.98		-19.43	-0.48	-42.51	-0.53	-13.61	1140.75
104	51	53		SB	33.55		-16.12	-1.74	-37.39	-2.79	-10.75	1177.61
103	52	51		TE	16.94		-17.57	-0.98	-33.77	-3.96	-8.30	1193.45
102	53	49		I	2.62		-14.52	-2.91	-32.16	-4.91	-7.64	1206.99
101	54	47		XE	-11.10		-15.84	-1.92	-30.43	-5.89	-6.89	1219.92
100	55	45		CS	-22.71		-12.75	-3.89	-28.67	-6.97	-6.21	1230.75
99	56	43		BA	-33.75		-14.15	-3.01	-26.98	-8.04	-5.58	1241.01
98	57	41		LA	-42.58		-11.05	-4.96	-25.28	-8.90	-4.74	1249.05
97	58	39		CE	-50.94		-12.54	-3.87	-23.67	-9.99	-4.23	1256.64
96	59	37		PR	-57.40		-9.54	-6.05	-22.16	-10.87	-3.60	1262.31
95	60	35		ND	-63.09		-10.96	-4.75	-20.57	-11.80	-2.94	1267.22
94	61	33		RM	-67.01		-7.89	-6.97	-18.92	-12.69	-2.18	1270.36
93	62	31		SM	-70.13	0.01	-9.31	-5.64	-17.27	-13.68	-1.51	1272.69
92	63	29		EU	-71.62	0.17	-6.35	-7.96	-15.73	-14.43	-0.73	1273.40
91	64	27		GD	-72.09	-0.05	-7.64	-6.39	-14.07	-15.33	0.04	1273.08
90	65	25		TB	-71.16	-0.02	-4.68	-8.86	-12.40	-15.82	1.21	1271.37
89	66	23		DY	-69.14	-0.10	-6.06	-6.88	-10.82	-16.16	2.45	1268.57
88	67	21		HO	-66.09		-3.05	-9.20	-9.19	-16.96	3.28	1264.74
87	68	19		ER	-61.93		-4.25	-7.69	-7.38	-17.72	4.33	1259.79
86	69	17		TM	-56.46		-1.44	-9.96	-5.77	-18.85	4.82	1253.54
85	70	15		YB	-49.59		-2.30	-8.82	-3.82	-19.73	5.89	1245.89
83	72	11		HF	-31.31		-0.19	-9.66	0.12	-23.32	6.24	1226.04
108	48	60	156	CD	101.31		-23.65	-0.12	-45.14	1.05	-14.77	1120.28
106	50	56		SN	57.44		-21.83	-1.12	-41.26	-1.10	-13.03	1162.59
105	51	54		SB	41.01		-16.76	-0.61	-37.96	-2.35	-10.98	1178.23
104	52	52		TE	22.63		-18.21	-2.38	-34.34	-3.36	-8.36	1195.82
103	53	50		I	9.07		-15.16	-1.62	-32.73	-4.52	-7.93	1208.61
102	54	48		XE	-6.58		-16.48	-3.55	-31.00	-5.47	-7.14	1223.47
101	55	46		CS	-17.20		-13.39	-2.56	-29.23	-6.46	-6.36	1233.31
100	56	44		BA	-30.21		-14.79	-4.53	-27.54	-7.54	-5.76	1245.54
99	57	42		LA	-38.15		-11.69	-3.65	-25.84	-8.61	-5.12	1252.70
98	58	40		CE	-48.47		-13.18	-5.60	-24.24	-9.46	-4.38	1262.23
97	59	38		PR	-53.83		-10.18	-4.51	-22.72	-10.55	-3.95	1266.81
96	60	36		ND	-61.71		-11.60	-6.69	-21.14	-11.44	-3.25	1273.91
95	61	34		RM	-64.33		-8.53	-5.39	-19.49	-12.36	-2.53	1275.75
94	62	32		SM	-69.67	-0.34	-9.95	-7.61	-17.84	-13.25	-1.76	1280.31
93	63	30		EU	-69.83	0.21	-6.99	-6.28	-16.30	-14.24	-1.21	1279.68
92	64	28		GD	-72.62	-0.12	-8.28	-8.60	-14.63	-14.99	-0.30	1281.68
91	65	26		TB	-70.12	-0.03	-5.32	-7.03	-12.97	-15.90	0.46	1278.41
90	66	24		DY	-70.58	0.28	-6.70	-9.50	-11.39	-16.39	1.55	1278.08
89	67	22		HO	-65.54		-3.69	-7.52	-9.75	-16.72	2.85	1272.26
88	68	20		ER	-63.69		-4.89	-9.84	-7.94	-17.53	3.86	1269.63
87	69	18		TM	-56.72		-2.08	-8.33	-6.33	-18.29	4.70	1261.88
86	70	16		YB	-52.12		-2.94	-10.60	-4.39	-19.41	5.52	1256.49
85	71	14		LU	-42.56		-0.26	-9.46	-2.56	-20.29	6.47	1246.15
84	72	12		HF	-34.71		-0.83	-11.47	-0.44	-21.13	7.75	1237.52
108	49	59	157	IN	88.48		-20.12	-0.17	-43.77	0.36	-13.86	1140.40
106	51	55		SB	47.91		-16.81	-1.17	-38.64	-1.78	-10.88	1179.40
105	52	53		TE	30.04		-18.26	-0.66	-35.02	-3.04	-8.51	1196.49
104	53	51		I	14.71		-15.21	-2.43	-33.42	-4.05	-7.91	1211.03
103	54	49		XE	-0.17		-16.53	-1.67	-31.69	-5.21	-7.35	1225.13
102	55	47		CS	-12.73		-13.44	-3.60	-29.92	-6.16	-6.53	1236.91
101	56	45		BA	-24.75		-14.84	-2.61	-28.23	-7.15	-5.83	1248.15
100	57	43		LA	-34.66		-11.74	-4.58	-26.53	-8.23	-5.21	1257.28
99	58	41		CE	-44.10		-13.23	-3.70	-24.93	-9.30	-4.67	1265.93
98	59	39		PR	-51.41		-10.23	-5.65	-23.41	-10.15	-4.01	1272.46
97	60	37		ND	-58.19		-11.65	-4.56	-21.83	-11.24	-3.52	1278.46
96	61	35		RM	-63.00		-8.58	-6.74	-20.18	-12.13	-2.76	1282.49
95	62	33		SM	-67.04		-10.00	-5.44	-18.53	-13.05	-2.03	1285.75
94	63	31		EU	-69.42	0.08	-7.04	-7.66	-16.99	-13.94	-1.38	1287.34
93	64	29		GD	-70.88	-0.11	-8.33	-6.33	-15.32	-14.93	-0.70	1288.01
92	65	27		TB	-70.70	0.01	-5.37	-8.65	-13.65	-15.68	0.21	1287.06
91	66	25		DY	-69.59	0.02	-6.75	-7.08	-12.08	-16.59	0.89	1285.16
90	67	23		HO	-67.03		-3.74	-9.55	-10.44	-17.08	2.03	1281.82
89	68	21		ER	-63.19		-4.94	-7.57	-8.63	-17.41	3.51	1277.20
88	69	19		TM	-58.53		-2.13	-9.89	-7.02	-18.22	4.31	1271.76
87	70	17		YB	-52.42		-2.99	-8.38	-5.08	-18.98	5.50	1264.87
86	71	15		LU	-45.13		-0.31	-10.65	-3.25	-20.10	6.20	1256.80
85	72	13		HF	-36.15		-0.88	-9.51	-1.13	-20.98	7.44	1247.03

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
108	50	58	158	SN	73.59		-22.17	-0.47	-42.29	0.01	-12.95	1162.57
106	52	54		TE	36.65		-18.55	-1.47	-35.37	-2.13	-8.17	1197.95
105	53	52		I	21.83		-15.50	-0.96	-33.76	-3.38	-7.82	1211.99
104	54	50		XE	5.18		-16.82	-2.72	-32.03	-4.39	-7.09	1227.86
103	55	48		CS	-6.62		-13.74	-1.96	-30.27	-5.56	-6.49	1238.87
102	56	46		BA	-20.57		-15.13	-3.89	-28.57	-6.50	-5.75	1252.04
101	57	44		LA	-29.50		-12.04	-2.91	-26.87	-7.49	-5.03	1260.19
100	58	42		CE	-40.90		-13.53	-4.88	-25.27	-8.57	-4.51	1270.81
99	59	40		PR	-47.33		-10.52	-3.99	-23.75	-9.64	-4.07	1276.45
98	60	38		ND	-56.06		-11.94	-5.94	-22.17	-10.50	-3.34	1284.41
97	61	36		RM	-59.78		-8.87	-4.85	-20.52	-11.59	-2.78	1287.34
96	62	34		SM	-66.00		-10.29	-7.03	-18.87	-12.47	-2.01	1292.78
95	63	32		EU	-67.09	0.04	-7.33	-5.73	-17.33	-13.39	-1.40	1293.08
94	64	30		GD	-70.76	-0.13	-8.63	-7.95	-15.66	-14.28	-0.62	1295.97
93	65	28		TB	-69.25	0.18	-5.67	-6.62	-14.00	-15.27	0.06	1293.68
92	66	26		DY	-70.46	-0.08	-7.05	-8.94	-12.42	-16.03	0.88	1294.10
91	67	24		HO	-66.33	0.00	-4.03	-7.38	-10.79	-16.93	1.61	1289.19
90	68	22		ER	-64.97		-5.23	-9.85	-8.97	-17.42	2.93	1287.05
89	69	20		TM	-58.33		-2.43	-7.87	-7.37	-17.75	4.21	1279.63
88	70	18		YB	-54.53		-3.29	-10.18	-5.42	-18.56	5.35	1275.05
87	71	16		LU	-45.74		-0.60	-8.67	-3.59	-19.32	6.41	1265.47
86	72	14		HF	-39.01		-1.17	-10.94	-1.48	-20.45	7.40	1257.96
108	51	57	159	SB	63.61		-17.27	-0.63	-39.45	-0.45	-10.79	1179.84
106	53	53		I	28.27		-15.67	-1.63	-34.22	-2.59	-7.71	1213.62
105	54	51		XE	12.13		-16.99	-1.12	-32.49	-3.84	-7.23	1228.98
104	55	49		CS	-1.43		-13.90	-2.89	-30.72	-4.85	-6.47	1241.76
103	56	47		BA	-14.63		-15.30	-2.13	-29.03	-6.02	-5.95	1254.17
102	57	45		LA	-25.48		-12.20	-4.05	-27.33	-6.96	-5.20	1264.24
101	58	43		CE	-35.90		-13.69	-3.07	-25.73	-7.95	-4.58	1273.88
100	59	41		PR	-44.30		-10.69	-5.04	-24.21	-9.03	-4.15	1281.49
99	60	39		ND	-52.15		-12.11	-4.16	-22.63	-10.10	-3.63	1288.56
98	61	37		RM	-57.81		-9.04	-6.11	-20.98	-10.96	-2.84	1293.44
97	62	35		SM	-62.94		-10.46	-5.01	-19.33	-12.04	-2.27	1297.79
96	63	33		EU	-66.21	-0.19	-7.50	-7.20	-17.79	-12.93	-1.62	1300.27
95	64	31		GD	-68.59	0.00	-8.79	-5.90	-16.12	-13.85	-0.88	1301.87
94	65	29		TB	-69.30	0.23	-5.83	-8.12	-14.46	-14.74	-0.10	1301.80
93	66	27		DY	-69.18	-0.02	-7.21	-6.79	-12.88	-15.73	0.49	1300.89
92	67	25		HO	-67.37	-0.02	-4.20	-9.11	-11.25	-16.48	1.37	1298.30
91	68	23		ER	-64.44		-5.40	-7.54	-9.43	-17.39	2.28	1294.59
90	69	21		TM	-60.27		-2.59	-10.01	-7.82	-17.88	3.39	1289.64
89	70	19		YB	-54.49		-3.45	-8.03	-5.88	-18.21	5.01	1283.08
88	71	17		LU	-48.01		-0.77	-10.34	-4.05	-19.02	6.03	1275.81
87	72	15		HF	-39.78		-1.33	-8.84	-1.93	-19.78	7.38	1266.80
110	50	60	160	SN	90.97		-22.90	-0.05	-43.48	1.23	-12.76	1161.34
108	52	56		TE	51.62		-19.28	-1.19	-36.55	-1.17	-8.24	1199.12
107	53	54		I	35.80		-16.23	-0.54	-34.95	-2.17	-7.63	1214.16
106	54	52		XE	18.01		-17.55	-2.19	-33.21	-3.31	-7.05	1231.17
105	55	50		CS	4.96		-14.46	-1.68	-31.45	-4.57	-6.54	1243.44
104	56	48		BA	-10.00		-15.86	-3.45	-29.76	-5.57	-5.85	1257.61
103	57	46		LA	-20.10		-12.76	-2.69	-28.06	-6.74	-5.32	1266.93
102	58	44		CE	-32.45		-14.25	-4.61	-26.45	-7.69	-4.66	1278.49
101	59	42		PR	-39.86		-11.25	-3.63	-24.94	-8.67	-4.13	1285.12
100	60	40		ND	-49.68		-12.67	-5.60	-23.35	-9.76	-3.63	1294.16
99	61	38		RM	-54.46		-9.60	-4.72	-21.71	-10.82	-3.05	1298.16
98	62	36		SM	-61.54		-11.02	-6.67	-20.05	-11.68	-2.25	1304.46
97	63	34		EU	-63.71	0.59	-8.06	-5.57	-18.51	-12.77	-1.80	1305.85
96	64	32		GD	-68.27	-0.38	-9.35	-7.76	-16.85	-13.66	-1.02	1309.62
95	65	30		TB	-67.69	0.17	-6.39	-6.46	-15.18	-14.58	-0.28	1308.26
94	66	28		DY	-69.78	-0.11	-7.77	-8.68	-13.60	-15.47	0.41	1309.57
93	67	26		HO	-66.64	-0.27	-4.76	-7.35	-11.97	-16.46	1.05	1305.65
92	68	24		ER	-66.04		-5.96	-9.67	-10.16	-17.21	2.11	1304.26
91	69	22		TM	-60.30		-3.15	-8.10	-8.55	-18.11	2.82	1297.74
90	70	20		YB	-56.99		-4.01	-10.57	-6.60	-18.60	4.27	1293.65
89	71	18		LU	-48.53		-1.33	-8.59	-4.78	-18.94	5.76	1284.41
88	72	16		HF	-42.61		-1.89	-10.91	-2.66	-19.74	7.08	1277.71
86	74	12		W	-23.71		-0.19	-11.66	0.73	-21.63	8.57	1257.24

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
108	53	55	161	I	42.78		-16.13	-1.10	-35.41	-1.64	-7.56	1215.25
107	54	53		XE	25.64		-17.45	-0.44	-33.68	-2.63	-6.83	1231.61
106	55	51		CS	10.93		-14.37	-2.10	-31.91	-3.78	-6.20	1245.53
105	56	49		BA	-3.51		-15.76	-1.59	-30.22	-5.03	-5.77	1259.20
104	57	47		LA	-15.38		-12.66	-3.35	-28.52	-6.04	-5.07	1270.28
103	58	45		CE	-26.96		-14.16	-2.59	-26.92	-7.21	-4.64	1281.08
102	59	43		PR	-36.31		-11.15	-4.52	-25.40	-8.15	-4.07	1289.64
101	60	41		ND	-45.14		-12.57	-3.54	-23.82	-9.14	-3.47	1297.70
100	61	39		RM	-51.89		-9.50	-5.51	-22.17	-10.22	-2.91	1303.66
99	62	37		SM	-58.09		-10.92	-4.62	-20.52	-11.29	-2.32	1309.08
98	63	35		EU	-62.21		-7.96	-6.57	-18.98	-12.15	-1.64	1312.42
97	64	33		GD	-65.68	-0.22	-9.25	-5.48	-17.31	-13.23	-1.06	1315.10
96	65	31		TB	-67.28	0.19	-6.30	-7.66	-15.65	-14.12	-0.28	1315.92
95	66	29		DY	-68.08	-0.03	-7.68	-6.36	-14.07	-15.04	0.37	1315.94
94	67	27		HO	-67.16	0.09	-4.66	-8.58	-12.44	-15.93	1.12	1314.23
93	68	25		ER	-65.22	0.03	-5.86	-7.25	-10.62	-16.92	1.94	1311.51
92	69	23		TM	-61.80	-0.07	-3.06	-9.57	-9.01	-17.67	2.80	1307.32
91	70	21		YB	-56.93		-3.92	-8.01	-7.07	-18.58	3.84	1301.66
90	71	19		LU	-50.94		-1.23	-10.48	-5.24	-19.07	5.17	1294.88
89	72	17		HF	-43.04		-1.80	-8.50	-3.12	-19.40	6.96	1286.21
87	74	13		W	-24.94		-0.10	-9.30	0.26	-20.97	8.78	1266.54
110	52	58	162	TE	68.10		-19.70	-0.48	-37.44	0.34	-7.91	1198.78
108	54	54		XE	32.09		-17.97	-1.62	-34.11	-2.06	-6.98	1233.23
107	55	52		CS	18.04		-14.89	-0.96	-32.34	-3.06	-6.21	1246.50
106	56	50		BA	1.94		-16.28	-2.62	-30.65	-4.20	-5.66	1261.82
105	57	48		LA	-9.41		-13.19	-2.11	-28.95	-5.46	-5.22	1272.39
104	58	46		CE	-22.77		-14.68	-3.87	-27.34	-6.46	-4.62	1284.96
103	59	44		PR	-31.35		-11.67	-3.11	-25.83	-7.63	-4.27	1292.76
102	60	42		ND	-42.11		-13.09	-5.04	-24.25	-8.58	-3.64	1302.74
101	61	40		RM	-47.88		-10.02	-4.06	-22.60	-9.56	-2.97	1307.72
100	62	38		SM	-56.04		-11.44	-6.03	-20.94	-10.65	-2.40	1315.10
99	63	36		EU	-59.28		-8.48	-5.14	-19.40	-11.71	-1.93	1317.56
98	64	34		GD	-64.70	-0.32	-9.78	-7.09	-17.74	-12.57	-1.12	1322.20
97	65	32		TB	-65.21	0.17	-6.82	-6.00	-16.07	-13.66	-0.55	1321.92
96	66	30		DY	-68.19	-0.00	-8.20	-8.18	-14.49	-14.55	0.15	1324.12
95	67	28		HO	-65.97	0.05	-5.18	-6.89	-12.86	-15.47	0.86	1321.12
94	68	26		ER	-66.25	0.12	-6.39	-9.10	-11.05	-16.36	1.78	1320.62
93	69	24		TM	-61.51	-0.03	-3.58	-7.78	-9.44	-17.35	2.40	1315.09
92	70	22		YB	-58.95		-4.44	-10.09	-7.49	-18.10	3.59	1311.75
91	71	20		LU	-51.39		-1.75	-8.53	-5.67	-19.00	4.51	1303.41
90	72	18		HF	-45.97		-2.32	-11.00	-3.55	-19.50	6.14	1297.20
89	73	16		TA	-35.82		-0.07	-9.02	-1.87	-19.83	7.49	1286.28
88	74	14		W	-28.20		-0.62	-11.33	-0.17	-20.64	8.39	1277.87
110	53	57	163	I	58.46		-16.93	-0.76	-36.64	-0.46	-7.57	1215.71
108	55	53		CS	24.22		-15.16	-1.90	-33.14	-2.86	-6.48	1248.39
107	56	51		BA	8.77		-16.56	-1.24	-31.45	-3.86	-5.78	1263.06
106	57	49		LA	-4.23		-13.46	-2.89	-29.75	-5.00	-5.23	1275.28
105	58	47		CE	-17.08		-14.96	-2.38	-28.14	-6.26	-4.88	1287.34
104	59	45		PR	-27.43		-11.95	-4.15	-26.63	-7.26	-4.37	1296.91
103	60	43		ND	-37.43		-13.37	-3.39	-25.04	-8.43	-3.95	1306.13
102	61	41		RM	-45.13		-10.30	-5.32	-23.40	-9.38	-3.25	1313.04
101	62	39		SM	-52.31		-11.72	-4.34	-21.74	-10.36	-2.58	1319.44
100	63	37		EU	-57.51		-8.76	-6.30	-20.20	-11.45	-2.13	1323.87
99	64	35		GD	-62.05		-10.05	-5.42	-18.54	-12.51	-1.53	1327.61
98	65	33		TB	-64.50	0.18	-7.09	-7.37	-16.87	-13.37	-0.72	1329.29
97	66	31		DY	-66.39	-0.03	-8.48	-6.28	-15.29	-14.46	-0.23	1330.40
96	67	29		HO	-66.36	-0.01	-5.46	-8.46	-13.66	-15.35	0.52	1329.58
95	68	27		ER	-65.34	-0.20	-6.66	-7.16	-11.85	-16.27	1.41	1327.78
94	69	25		TM	-62.82	0.06	-3.85	-9.38	-10.24	-17.16	2.12	1324.47
93	70	23		YB	-58.93		-4.72	-8.05	-8.29	-18.15	3.08	1319.81
92	71	21		LU	-53.69		-2.03	-10.37	-6.47	-18.90	4.15	1313.78
91	72	19		HF	-46.70		-2.60	-8.80	-4.35	-19.80	5.37	1306.01
90	73	17		TA	-39.03		-0.35	-11.28	-2.67	-20.29	6.56	1297.55
89	74	15		W	-29.43		-0.90	-9.30	-0.96	-20.63	7.93	1287.17

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
112	52	60	164	TE	85.41		-20.18	-0.03	-38.71	1.16	-7.98	1197.62
110	54	56		XE	47.31		-18.44	-0.95	-35.38	-0.93	-6.74	1234.16
109	55	54		CS	32.12		-15.36	-0.17	-33.61	-2.07	-6.11	1248.56
108	56	52		BA	14.75		-16.75	-2.09	-31.92	-3.33	-5.68	1265.15
107	57	50		LA	2.40		-13.66	-1.43	-30.22	-4.33	-4.98	1276.71
106	58	48		CE	-12.09		-15.15	-3.09	-28.61	-5.47	-4.52	1290.43
105	59	46		PR	-21.93		-12.14	-2.58	-27.10	-6.73	-4.26	1299.48
104	60	44		ND	-33.70		-13.57	-4.34	-25.52	-7.73	-3.68	1310.47
103	61	42		RM	-40.64		-10.49	-3.58	-23.87	-8.90	-3.20	1316.62
102	62	40		SM	-49.75		-11.91	-5.51	-22.21	-9.85	-2.50	1324.95
101	63	38		EU	-53.97		-8.95	-4.53	-20.67	-10.83	-1.94	1328.39
100	64	36		GD	-60.47		-10.25	-6.50	-19.01	-11.92	-1.36	1334.11
99	65	34		TB	-62.05	0.10	-7.29	-5.61	-17.34	-12.98	-0.76	1334.90
98	66	32		DY	-65.88	0.06	-8.67	-7.56	-15.76	-13.84	-0.04	1337.96
97	67	30		HO	-64.76	0.08	-5.65	-6.47	-14.13	-14.93	0.50	1336.05
96	68	28		ER	-65.93	-0.06	-6.86	-8.65	-12.32	-15.82	1.43	1336.44
95	69	26		TM	-62.10	-0.20	-4.05	-7.36	-10.71	-16.74	2.12	1331.83
94	70	24		YB	-60.44		-4.91	-9.58	-8.76	-17.63	3.17	1329.38
93	71	22		LU	-53.87		-2.22	-8.25	-6.94	-18.62	4.01	1322.03
92	72	20		HF	-49.19		-2.79	-10.57	-4.82	-19.37	5.38	1316.57
91	73	18		TA	-39.95		-0.54	-9.00	-3.14	-20.27	6.15	1306.55
90	74	16		W	-32.82		-1.09	-11.47	-1.43	-20.77	7.37	1298.64
112	53	59	165	I	75.30		-17.40	-0.30	-37.57	0.70	-7.64	1215.02
110	55	55		CS	38.96		-15.63	-1.22	-34.08	-1.40	-6.24	1249.79
109	56	53		BA	22.38		-17.03	-0.45	-32.39	-2.53	-5.69	1265.59
108	57	51		LA	8.11		-13.93	-2.36	-30.68	-3.80	-5.25	1279.08
107	58	49		CE	-5.73		-15.42	-1.71	-29.08	-4.80	-4.64	1292.14
106	59	47		PR	-17.22		-12.42	-3.36	-27.57	-5.94	-4.27	1302.84
105	60	45		ND	-28.48		-13.84	-2.85	-25.98	-7.20	-3.94	1313.32
104	61	43		RM	-37.18		-10.77	-4.62	-24.33	-8.20	-3.30	1321.24
103	62	41		SM	-45.53		-12.19	-3.86	-22.68	-9.37	-2.81	1328.81
102	63	39		EU	-51.69		-9.23	-5.79	-21.14	-10.32	-2.22	1334.18
101	64	37		GD	-57.20		-10.52	-4.80	-19.47	-11.30	-1.54	1338.92
100	65	35		TB	-60.75		-7.56	-6.77	-17.81	-12.38	-0.96	1341.67
99	66	33		DY	-63.70	-0.19	-8.94	-5.89	-16.23	-13.45	-0.45	1343.85
98	67	31		HO	-64.52	0.29	-5.93	-7.84	-14.60	-14.31	0.33	1343.89
97	68	29		ER	-64.60	-0.16	-7.13	-6.74	-12.78	-15.40	1.05	1343.18
96	69	27		TM	-62.96	-0.09	-4.32	-8.93	-11.18	-16.28	1.77	1340.76
95	70	25		YB	-60.00	0.14	-5.18	-7.63	-9.23	-17.21	2.80	1337.01
94	71	23		LU	-55.65		-2.50	-9.85	-7.41	-18.10	3.73	1331.88
93	72	21		HF	-49.64		-3.07	-8.52	-5.29	-19.09	4.86	1325.09
92	73	19		TA	-42.72		-0.81	-10.84	-3.61	-19.84	5.79	1317.39
91	74	17		W	-34.02		-1.36	-9.27	-1.90	-20.74	6.59	1307.91
112	54	58	166	XE	63.37		-19.22	-0.80	-36.61	-0.08	-7.15	1234.23
110	56	54		BA	28.73		-17.53	-1.72	-33.16	-2.17	-5.79	1267.31
109	57	52		LA	15.24		-14.43	-0.94	-31.46	-3.31	-5.23	1280.02
108	58	50		CE	-0.52		-15.92	-2.86	-29.85	-4.57	-4.89	1295.00
107	59	48		PR	-11.36		-12.91	-2.21	-28.34	-5.57	-4.37	1305.05
106	60	46		ND	-24.27		-14.34	-3.86	-26.75	-6.71	-3.93	1317.18
105	61	44		RM	-32.46		-11.27	-3.35	-25.11	-7.97	-3.54	1324.59
104	62	42		SM	-42.58		-12.68	-5.11	-23.45	-8.97	-2.89	1333.92
103	63	40		EU	-47.97		-9.73	-4.35	-21.91	-10.14	-2.52	1338.53
102	64	38		GD	-55.42		-11.02	-6.28	-20.25	-11.09	-1.80	1345.20
101	65	36		TB	-57.98		-8.06	-5.30	-18.58	-12.07	-1.12	1346.98
100	66	34		DY	-62.90	-0.31	-9.44	-7.27	-17.00	-13.16	-0.62	1351.11
99	67	32		HO	-62.84	0.23	-6.43	-6.38	-15.37	-14.22	-0.06	1350.27
98	68	30		ER	-64.86	0.05	-7.63	-8.34	-13.56	-15.08	0.90	1351.52
97	69	28		TM	-62.13	-0.25	-4.82	-7.24	-11.95	-16.17	1.42	1348.00
96	70	26		YB	-61.35	0.27	-5.68	-9.42	-10.00	-17.06	2.48	1346.44
95	71	24		LU	-55.70		-2.99	-8.13	-8.18	-17.98	3.38	1340.01
94	72	22		HF	-51.92		-3.56	-10.35	-6.06	-18.87	4.61	1335.44
93	73	20		TA	-43.67		-1.31	-9.02	-4.38	-19.86	5.30	1326.41
92	74	18		W	-37.29		-1.86	-11.34	-2.67	-20.61	6.25	1319.25
90	76	14		OS	-17.15		-0.07	-12.24	1.09	-22.00	8.62	1297.55

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
112	55	57	167	CS	54.47		-16.19	-0.86	-35.41	-0.63	-6.42	1250.42
110	57	53		LA	21.53		-14.49	-1.78	-32.02	-2.73	-5.12	1281.80
109	58	51		CE	6.55		-15.98	-1.00	-30.41	-3.87	-4.65	1296.00
108	59	49		PR	-6.21		-12.98	-2.92	-28.90	-5.13	-4.40	1307.97
107	60	47		ND	-18.47		-14.40	-2.27	-27.31	-6.13	-3.81	1319.45
106	61	45		RM	-28.31		-11.33	-3.92	-25.67	-7.27	-3.31	1328.51
105	62	43		SM	-37.92		-12.75	-3.41	-24.01	-8.53	-2.91	1337.34
104	63	41		EU	-45.08		-9.79	-5.18	-22.47	-9.53	-2.38	1343.71
103	64	39		GD	-51.76		-11.08	-4.42	-20.81	-10.70	-1.88	1349.62
102	65	37		TB	-56.25		-8.12	-6.35	-19.14	-11.65	-1.16	1353.32
101	66	35		DY	-60.19		-9.50	-5.36	-17.56	-12.63	-0.57	1356.48
100	67	33		HO	-62.10	0.18	-6.49	-7.33	-15.93	-13.72	-0.02	1357.60
99	68	31		ER	-63.24	0.05	-7.69	-6.45	-14.12	-14.78	0.73	1357.96
98	69	29		TM	-62.45	-0.33	-4.88	-8.40	-12.51	-15.64	1.48	1356.40
97	70	27		YB	-60.58	-0.16	-5.74	-7.30	-10.56	-16.73	2.34	1353.74
96	71	25		LU	-57.12	0.26	-3.06	-9.49	-8.74	-17.62	3.28	1349.49
95	72	23		HF	-52.04		-3.63	-8.19	-6.62	-18.54	4.47	1343.63
94	73	21		TA	-46.00		-1.37	-10.41	-4.94	-19.43	5.26	1336.82
93	74	19		W	-38.30		-1.92	-9.08	-3.23	-20.42	5.98	1328.33
91	76	15		OS	-18.91		-0.13	-9.83	0.53	-22.07	8.09	1307.38
114	54	60	168	XE	80.45		-19.68	-0.32	-37.64	0.93	-7.39	1233.30
112	56	56		BA	43.77		-17.99	-1.27	-34.18	-1.10	-5.96	1268.41
111	57	54		LA	29.36		-14.89	-0.24	-32.48	-2.02	-5.18	1282.04
110	58	52		CE	12.43		-16.39	-2.19	-30.88	-3.19	-4.75	1298.19
109	59	50		PR	0.45		-13.38	-1.41	-29.36	-4.33	-4.37	1309.38
108	60	48		ND	-13.72		-14.80	-3.33	-27.78	-5.60	-4.05	1322.78
107	61	46		RM	-22.91		-11.73	-2.67	-26.13	-6.59	-3.40	1331.18
106	62	44		SM	-34.17		-13.15	-4.32	-24.48	-7.74	-2.89	1341.66
105	63	42		EU	-40.82		-10.19	-3.81	-22.94	-8.99	-2.61	1347.53
104	64	40		GD	-49.27		-11.48	-5.58	-21.27	-10.00	-1.95	1355.20
103	65	38		TB	-53.00		-8.52	-4.82	-19.61	-11.16	-1.45	1358.14
102	66	36		DY	-58.87		-9.91	-6.75	-18.03	-12.11	-0.82	1363.23
101	67	34		HO	-59.79	-0.11	-6.89	-5.77	-16.39	-13.10	-0.17	1363.37
100	68	32		ER	-62.90	0.08	-8.09	-7.73	-14.58	-14.18	0.56	1365.70
99	69	30		TM	-61.23	0.03	-5.28	-6.85	-12.97	-15.25	1.10	1363.25
98	70	28		YB	-61.31	0.02	-6.15	-8.80	-11.03	-16.10	2.19	1362.54
97	71	26		LU	-56.75	-0.02	-3.46	-7.71	-9.20	-17.19	2.92	1357.20
96	72	24		HF	-53.86		-4.03	-9.89	-7.08	-18.08	4.16	1353.52
95	73	22		TA	-46.53		-1.78	-8.59	-5.40	-19.00	4.92	1345.41
94	74	20		W	-41.04		-2.33	-10.81	-3.70	-19.89	5.73	1339.14
92	76	16		OS	-22.64		-0.53	-11.80	0.07	-21.63	7.76	1319.18
114	55	59	169	CS	70.89		-16.85	-0.57	-36.53	0.27	-6.84	1250.15
112	57	55		LA	35.91		-15.15	-1.52	-33.14	-1.76	-5.48	1283.56
111	58	53		CE	20.01		-16.64	-0.49	-31.54	-2.68	-4.80	1298.68
110	59	51		PR	6.08		-13.64	-2.44	-30.02	-3.85	-4.45	1311.83
109	60	49		ND	-7.31		-15.06	-1.66	-28.44	-4.99	-4.01	1324.44
108	61	47		RM	-18.42		-11.99	-3.58	-26.79	-6.25	-3.62	1334.76
107	62	45		SM	-29.03		-13.40	-2.93	-25.14	-7.25	-2.97	1344.59
106	63	43		EU	-37.33		-10.45	-4.58	-23.60	-8.39	-2.57	1352.11
105	64	41		GD	-45.27		-11.74	-4.07	-21.93	-9.65	-2.16	1359.27
104	65	39		TB	-50.76		-8.78	-5.84	-20.26	-10.65	-1.50	1363.98
103	66	37		DY	-55.87		-10.16	-5.07	-18.69	-11.82	-1.09	1368.30
102	67	35		HO	-58.72	0.09	-7.15	-7.00	-17.05	-12.77	-0.40	1370.37
101	68	33		ER	-60.85	0.06	-8.35	-6.02	-15.24	-13.76	0.42	1371.72
100	69	31		TM	-61.15	0.10	-5.54	-7.99	-13.63	-14.84	0.95	1371.24
99	70	29		YB	-60.35	-0.30	-6.40	-7.11	-11.69	-15.91	1.83	1369.65
98	71	27		LU	-57.74	0.05	-3.71	-9.06	-9.86	-16.76	2.80	1366.26
97	72	25		HF	-53.75		-4.28	-7.96	-7.74	-17.85	3.82	1361.49
96	73	23		TA	-48.60		-2.03	-10.15	-6.06	-18.74	4.62	1355.55
95	74	21		W	-41.82		-2.58	-8.85	-4.36	-19.66	5.40	1347.99
94	75	19		RE	-33.81		-0.06	-11.07	-2.38	-20.55	6.49	1339.20
93	76	17		OS	-24.31		-0.79	-9.74	-0.59	-21.54	7.29	1328.92

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
116	54	62	170	XE	97.94		-20.22	-0.17	-38.83	1.35	-7.99	1231.95
114	56	58		BA	59.65		-18.53	-0.85	-35.38	-0.26	-6.15	1268.68
112	58	54		CE	26.28		-16.92	-1.80	-32.07	-2.30	-4.88	1300.49
111	59	52		PR	13.38		-13.92	-0.77	-30.56	-3.22	-4.28	1312.60
110	60	50		ND	-1.97		-15.34	-2.72	-28.97	-4.39	-3.87	1327.17
109	61	48		RM	-12.29		-12.27	-1.94	-27.33	-5.53	-3.36	1336.71
108	62	46		SM	-24.82		-13.69	-3.86	-25.67	-6.79	-2.97	1348.45
107	63	44		EU	-32.46		-10.73	-3.21	-24.13	-7.79	-2.43	1355.31
106	64	42		GD	-42.06		-12.02	-4.86	-22.47	-8.93	-1.91	1364.13
105	65	40		TB	-47.04		-9.06	-4.35	-20.80	-10.19	-1.50	1368.33
104	66	38		DY	-53.92		-10.44	-6.12	-19.22	-11.19	-0.92	1374.42
103	67	36		HO	-56.01	-0.19	-7.43	-5.36	-17.59	-12.36	-0.46	1375.73
102	68	34		ER	-60.07	-0.05	-8.63	-7.29	-15.78	-13.31	0.41	1379.00
101	69	32		TM	-59.38	0.18	-5.82	-6.30	-14.17	-14.29	1.03	1377.54
100	70	30		YB	-60.55	-0.02	-6.68	-8.27	-12.22	-15.38	1.89	1377.92
99	71	28		LU	-57.05	0.07	-4.00	-7.39	-10.40	-16.44	2.65	1373.64
98	72	26		HF	-55.01		-4.56	-9.34	-8.28	-17.30	3.91	1370.82
97	73	24		TA	-48.77		-2.31	-8.24	-6.60	-18.39	4.50	1363.80
96	74	22		W	-44.17		-2.86	-10.43	-4.89	-19.28	5.32	1358.42
95	75	20		RE	-34.87		-0.34	-9.13	-2.92	-20.20	6.37	1348.33
94	76	18		OS	-27.59		-1.07	-11.35	-1.13	-21.09	7.28	1340.27
116	55	61	171	CS	87.70		-17.53	-0.57	-37.75	0.67	-7.57	1249.48
114	57	57		LA	51.11		-15.83	-1.26	-34.36	-0.95	-5.79	1284.51
113	58	55		CE	34.25		-17.33	-0.09	-32.76	-1.90	-5.14	1300.58
112	59	53		PR	19.25		-14.32	-2.21	-31.24	-2.98	-4.70	1314.81
111	60	51		ND	4.93		-15.74	-1.18	-29.66	-3.90	-4.04	1328.34
110	61	49		RM	-7.35		-12.67	-3.13	-28.01	-5.07	-3.57	1339.84
109	62	47		SM	-19.09		-14.09	-2.35	-26.36	-6.21	-3.05	1350.80
108	63	45		EU	-28.66		-11.13	-4.27	-24.82	-7.47	-2.77	1359.58
107	64	43		GD	-37.60		-12.42	-3.61	-23.15	-8.47	-2.11	1367.74
106	65	41		TB	-44.23		-9.46	-5.26	-21.48	-9.61	-1.58	1373.59
105	66	39		DY	-50.60		-10.85	-4.75	-19.91	-10.87	-1.26	1379.17
104	67	37		HO	-54.46		-7.83	-6.52	-18.27	-11.88	-0.63	1382.25
103	68	35		ER	-57.75	-0.12	-9.03	-5.76	-16.46	-13.04	0.01	1384.76
102	69	33		TM	-59.00	0.12	-6.22	-7.69	-14.85	-13.99	0.67	1385.23
101	70	31		YB	-59.18	0.04	-7.09	-6.71	-12.91	-14.98	1.63	1384.62
100	71	29		LU	-57.66	-0.04	-4.40	-8.67	-11.08	-16.06	2.37	1382.32
99	72	27		HF	-54.73		-4.97	-7.79	-8.96	-17.13	3.43	1378.61
98	73	25		TA	-50.44		-2.72	-9.74	-7.28	-17.98	4.25	1373.54
97	74	23		W	-44.75		-3.27	-8.65	-5.58	-19.07	4.86	1367.06
96	75	21		RE	-37.63		-0.74	-10.83	-3.60	-19.96	5.95	1359.16
95	76	19		OS	-29.05		-1.47	-9.53	-1.81	-20.88	6.82	1349.80
116	56	60	172	BA	75.61		-19.38	-1.02	-36.91	-0.19	-7.27	1268.86
114	58	56		CE	40.62		-17.77	-1.70	-33.61	-1.80	-5.58	1302.29
113	59	54		PR	26.77		-14.77	-0.54	-32.09	-2.75	-5.01	1315.35
112	60	52		ND	10.34		-16.19	-2.65	-30.51	-3.83	-4.51	1331.00
111	61	50		RM	-0.90		-13.12	-1.63	-28.86	-4.75	-3.78	1341.46
110	62	48		SM	-14.60		-14.54	-3.58	-27.21	-5.92	-3.30	1354.37
109	63	46		EU	-23.38		-11.58	-2.80	-25.67	-7.06	-2.90	1362.38
108	64	44		GD	-34.24		-12.87	-4.71	-24.00	-8.33	-2.50	1372.45
107	65	42		TB	-40.22		-9.91	-4.06	-22.34	-9.32	-1.83	1377.65
106	66	40		DY	-48.24		-11.29	-5.71	-20.76	-10.47	-1.39	1384.89
105	67	38		HO	-51.59		-8.28	-5.20	-19.13	-11.72	-1.02	1387.45
104	68	36		ER	-56.65	-0.14	-9.48	-6.97	-17.31	-12.73	-0.21	1391.73
103	69	34		TM	-57.14	0.26	-6.67	-6.21	-15.70	-13.90	0.23	1391.43
102	70	32		YB	-59.25	0.03	-7.53	-8.14	-13.76	-14.84	1.23	1392.76
101	71	30		LU	-56.74	-0.16	-4.85	-7.15	-11.93	-15.83	2.07	1389.47
100	72	28		HF	-55.78		-5.42	-9.12	-9.82	-16.91	3.10	1387.73
99	73	26		TA	-50.61		-3.17	-8.24	-8.13	-17.98	3.72	1381.78
98	74	24		W	-46.87		-3.71	-10.19	-6.43	-18.84	4.57	1377.25
97	75	22		RE	-38.65		-1.19	-9.10	-4.46	-19.93	5.45	1368.25
96	76	20		OS	-32.26		-1.92	-11.28	-2.66	-20.81	6.36	1361.08
94	78	16		PT	-11.90		-0.26	-12.20	1.11	-22.62	8.32	1339.15

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
118	55	63	173	CS	104.91		-18.26	-0.27	-39.33	1.07	-8.39	1248.41
116	57	59		LA	66.34		-16.56	-1.30	-35.94	-0.91	-6.98	1285.48
114	59	55		PR	32.86		-15.05	-1.98	-32.82	-2.53	-5.47	1317.33
113	60	53		ND	17.59		-16.47	-0.82	-31.24	-3.48	-4.84	1331.82
112	61	51		RM	4.24		-13.40	-2.93	-29.59	-4.56	-4.27	1344.39
111	62	49		SM	-8.43		-14.82	-1.91	-27.94	-5.48	-3.54	1356.28
110	63	47		EU	-19.17		-11.86	-3.86	-26.40	-6.65	-3.17	1366.23
109	64	45		GD	-29.25		-13.15	-3.08	-24.73	-7.79	-2.64	1375.53
108	65	43		TB	-37.14		-10.19	-4.99	-23.06	-9.05	-2.24	1382.64
107	66	41		DY	-44.51		-11.57	-4.34	-21.49	-10.05	-1.66	1389.22
106	67	39		HO	-49.51		-8.56	-5.99	-19.85	-11.19	-1.17	1393.44
105	68	37		ER	-54.06		-9.76	-5.48	-18.04	-12.45	-0.62	1397.21
104	69	35		TM	-56.31	0.06	-6.95	-7.25	-16.43	-13.45	-0.01	1398.68
103	70	33		YB	-57.66	0.03	-7.81	-6.49	-14.49	-14.62	0.77	1399.25
102	71	31		LU	-57.08	-0.08	-5.13	-8.42	-12.66	-15.57	1.64	1397.89
101	72	29		HF	-55.15		-5.70	-7.43	-10.54	-16.56	2.78	1395.17
100	73	27		TA	-51.94		-3.44	-9.40	-8.86	-17.64	3.38	1391.18
99	74	25		W	-47.31		-3.99	-8.52	-7.16	-18.71	4.01	1385.77
98	75	23		RE	-41.05		-1.47	-10.47	-5.18	-19.56	5.13	1378.72
97	76	21		OS	-33.56		-2.20	-9.38	-3.39	-20.65	5.83	1370.45
95	78	17		PT	-14.09		-0.54	-10.26	0.38	-22.46	7.80	1349.42
118	56	62	174	BA	92.37		-19.83	-0.44	-38.09	0.62	-8.00	1268.24
116	58	58		CE	55.40		-18.22	-1.47	-34.79	-1.36	-6.67	1303.65
115	59	56		PR	40.87		-15.22	-0.06	-33.27	-2.05	-5.85	1317.40
114	60	54		ND	23.51		-16.64	-2.15	-31.69	-2.98	-5.19	1333.97
113	61	52		RM	11.31		-13.57	-0.99	-30.04	-3.93	-4.49	1345.39
112	62	50		SM	-3.46		-14.99	-3.10	-28.39	-5.01	-3.92	1359.38
111	63	48		EU	-13.17		-12.03	-2.08	-26.85	-5.93	-3.30	1368.31
110	64	46		GD	-25.20		-13.32	-4.03	-25.18	-7.10	-2.81	1379.55
109	65	44		TB	-32.32		-10.36	-3.25	-23.51	-8.24	-2.28	1385.89
108	66	42		DY	-41.60		-11.74	-5.16	-21.94	-9.50	-1.97	1394.39
107	67	40		HO	-45.95		-8.73	-4.51	-20.30	-10.50	-1.33	1397.95
106	68	38		ER	-52.15		-9.93	-6.16	-18.49	-11.64	-0.66	1403.37
105	69	36		TM	-53.89	0.17	-7.12	-5.65	-16.88	-12.90	-0.31	1404.34
104	70	34		YB	-57.01	0.05	-7.98	-7.42	-14.94	-13.90	0.63	1406.67
103	71	32		LU	-55.67	-0.11	-5.30	-6.66	-13.11	-15.07	1.29	1404.55
102	72	30		HF	-55.66	-0.11	-5.87	-8.59	-10.99	-16.02	2.46	1403.75
101	73	28		TA	-51.47		-3.61	-7.60	-9.31	-17.01	3.16	1398.78
100	74	26		W	-48.81		-4.16	-9.57	-7.61	-18.09	3.78	1395.34
99	75	24		RE	-41.66		-1.64	-8.69	-5.63	-19.16	4.69	1387.41
98	76	22		OS	-36.13		-2.37	-10.64	-3.84	-20.01	5.62	1381.09
96	78	18		PT	-17.74		-0.71	-11.73	-0.07	-21.99	7.42	1361.14
118	57	61	175	LA	82.60		-17.06	-0.76	-36.88	0.13	-7.52	1285.30
116	59	57		PR	47.15		-15.54	-1.79	-33.77	-1.86	-6.38	1319.19
115	60	55		ND	31.19		-16.96	-0.39	-32.18	-2.54	-5.49	1334.36
114	61	53		RM	16.91		-13.89	-2.48	-30.53	-3.47	-4.76	1347.87
113	62	51		SM	3.29		-15.31	-1.32	-28.88	-4.42	-4.06	1360.70
112	63	49		EU	-8.53		-12.35	-3.43	-27.34	-5.50	-3.60	1371.73
111	64	47		GD	-19.53		-13.65	-2.40	-25.67	-6.43	-2.86	1381.95
110	65	45		TB	-28.60		-10.69	-4.35	-24.01	-7.60	-2.36	1390.24
109	66	43		DY	-37.10		-12.07	-3.57	-22.43	-8.73	-1.92	1397.96
108	67	41		HO	-43.36		-9.05	-5.49	-20.80	-10.00	-1.56	1403.44
107	68	39		ER	-48.91		-10.25	-4.83	-18.98	-11.00	-0.74	1408.21
106	69	37		TM	-52.31	0.01	-7.45	-6.49	-17.38	-12.14	-0.27	1410.82
105	70	35		YB	-54.91	-0.09	-8.31	-5.98	-15.43	-13.39	0.42	1412.64
104	71	33		LU	-55.34	-0.05	-5.62	-7.74	-13.61	-14.40	1.24	1412.29
103	72	31		HF	-54.57	0.13	-6.19	-6.98	-11.49	-15.57	2.19	1410.74
102	73	29		TA	-52.31		-3.94	-8.91	-9.80	-16.52	2.92	1407.69
101	74	27		W	-48.67		-4.49	-7.93	-8.10	-17.50	3.64	1403.27
100	75	25		RE	-43.49		-1.96	-9.90	-6.13	-18.58	4.53	1397.31
99	76	23		OS	-37.07		-2.69	-9.01	-4.33	-19.65	5.26	1390.10
97	78	19		PT	-19.54		-1.03	-9.87	-0.56	-21.60	7.08	1371.01
118	58	60	176	CE	71.21		-18.68	-0.89	-35.74	-0.33	-6.82	1303.98
116	60	56		ND	37.34		-17.10	-1.93	-32.64	-2.32	-5.71	1336.29
115	61	54		RM	24.46		-14.03	-0.52	-30.99	-3.00	-4.74	1348.39
114	62	52		SM	8.75		-15.45	-2.61	-29.34	-3.93	-4.02	1363.31
113	63	50		EU	-1.91		-12.49	-1.45	-27.80	-4.88	-3.43	1373.19
112	64	48		GD	-15.02		-13.78	-3.56	-26.13	-5.96	-2.85	1385.51
111	65	46		TB	-23.06		-10.82	-2.53	-24.47	-6.88	-2.10	1392.77
110	66	44		DY	-33.51		-12.20	-4.48	-22.89	-8.05	-1.69	1402.44
109	67	42		HO	-39.00		-9.19	-3.70	-21.26	-9.19	-1.20	1407.15
108	68	40		ER	-46.46		-10.39	-5.62	-19.44	-10.46	-0.65	1413.83
107	69	38		TM	-49.20	-0.01	-7.58	-4.97	-17.84	-11.45	-0.04	1415.79
106	70	36		YB	-53.46	-0.07	-8.44	-6.62	-15.89	-12.60	0.76	1419.26
105	71	34		LU	-53.38	0.03	-5.76	-6.11	-14.06	-13.85	1.33	1418.40
104	72	32		HF	-54.37	0.06	-6.32	-7.88	-11.95	-14.86	2.45	1418.61
103	73	30		TA	-51.35		-4.07	-7.12	-10.26	-16.03	2.96	1414.81
102	74	28		W	-49.64		-4.62	-9.04	-8.56	-16.97	3.72	1412.31
101	75	26		RE	-43.48		-2.10	-8.06	-6.59	-17.96	4.70	1405.37
100	76	24		OS	-39.03		-2.83	-10.03	-4.79	-19.04	5.41	1400.13
98	78	20		PT	-22.57		-1.17	-11.10	-1.02	-20.97	7.26	1382.11

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
120	57	63	177	LA	100.01		-17.56	-0.18	-37.85	1.26	-7.33	1284.04
118	59	59		PR	62.45		-16.05	-1.27	-34.73	-0.84	-6.31	1320.03
116	61	55		RM	30.23		-14.40	-2.30	-31.50	-2.82	-5.06	1350.69
115	62	53		SM	15.92		-15.82	-0.90	-29.85	-3.51	-4.09	1364.21
114	63	51		EU	3.18		-12.86	-2.99	-28.31	-4.44	-3.48	1376.17
113	64	49		GD	-8.77		-14.15	-1.83	-26.64	-5.39	-2.77	1387.34
112	65	47		TB	-18.92		-11.20	-3.94	-24.97	-6.47	-2.18	1396.71
111	66	45		DY	-28.35		-12.58	-2.91	-23.40	-7.39	-1.53	1405.35
110	67	43		HO	-35.78		-9.56	-4.86	-21.76	-8.56	-1.06	1412.00
109	68	41		ER	-42.47		-10.76	-4.08	-19.95	-9.70	-0.39	1417.91
108	69	39		TM	-47.13		-7.95	-6.00	-18.34	-10.96	-0.05	1421.79
107	70	37		YB	-50.73	0.12	-8.82	-5.34	-16.40	-11.96	0.90	1424.61
106	71	35		LU	-52.30	-0.07	-6.13	-6.99	-14.57	-13.11	1.59	1425.39
105	72	33		HF	-52.79	-0.07	-6.70	-6.49	-12.45	-14.36	2.45	1425.10
104	73	31		TA	-51.53	0.03	-4.45	-8.25	-10.77	-15.37	3.13	1423.06
103	74	29		W	-49.06		-5.00	-7.49	-9.07	-16.53	3.66	1419.80
102	75	27		RE	-44.83		-2.47	-9.42	-7.09	-17.48	4.69	1414.79
101	76	25		OS	-39.39		-3.20	-8.44	-5.30	-18.47	5.49	1408.57
100	77	23		IR	-32.09		-0.36	-10.40	-3.19	-19.55	6.53	1400.49
99	78	21		PT	-24.02		-1.54	-9.52	-1.53	-20.62	7.12	1391.63
120	58	62	178	CE	87.80		-19.50	-0.62	-37.06	0.44	-7.00	1303.54
118	60	58		ND	51.82		-17.92	-1.71	-33.97	-1.66	-6.00	1337.95
117	61	56		RM	37.91		-14.85	-0.39	-32.32	-2.69	-5.39	1351.08
116	62	54		SM	21.25		-16.26	-2.75	-30.67	-3.64	-4.68	1366.95
115	63	52		EU	9.91		-13.31	-1.34	-29.13	-4.33	-3.83	1377.51
114	64	50		GD	-4.13		-14.60	-3.43	-27.46	-5.26	-3.09	1390.77
113	65	48		TB	-13.12		-11.64	-2.27	-25.79	-6.21	-2.38	1398.98
112	66	46		DY	-24.66		-13.02	-4.38	-24.22	-7.29	-1.88	1409.73
111	67	44		HO	-31.06		-10.01	-3.35	-22.58	-8.21	-1.17	1415.36
110	68	42		ER	-39.70		-11.21	-5.30	-20.77	-9.38	-0.53	1423.21
109	69	40		TM	-43.58		-8.40	-4.52	-19.16	-10.52	-0.06	1426.31
108	70	38		YB	-49.10	-0.08	-9.26	-6.44	-17.22	-11.78	0.62	1431.05
107	71	36		LU	-50.02	0.00	-6.57	-5.79	-15.39	-12.78	1.45	1431.18
106	72	34		HF	-52.16	0.11	-7.14	-7.44	-13.27	-13.92	2.43	1432.54
105	73	32		TA	-50.39	-0.03	-4.89	-6.93	-11.59	-15.18	2.85	1429.99
104	74	30		W	-49.68		-5.44	-8.69	-9.89	-16.18	3.55	1428.50
103	75	28		RE	-44.69		-2.92	-7.93	-7.91	-17.35	4.36	1422.72
102	76	26		OS	-41.18		-3.65	-9.86	-6.12	-18.30	5.20	1418.43
101	77	24		IR	-32.90		-0.80	-8.88	-4.00	-19.29	6.33	1409.37
100	78	22		PT	-26.79		-1.99	-10.85	-2.34	-20.37	6.91	1402.48
98	80	18		HG	-7.10		-0.14	-11.92	0.89	-22.29	8.22	1381.22
122	57	65	179	LA	117.61		-18.45	-0.04	-39.56	1.45	-8.10	1282.58
120	59	61		PR	78.15		-16.94	-1.06	-36.44	-0.44	-6.88	1320.47
118	61	57		RM	43.82		-15.29	-2.16	-33.21	-2.55	-5.75	1353.24
117	62	55		SM	28.49		-16.71	-0.83	-31.55	-3.58	-5.13	1367.79
116	63	53		EU	14.79		-13.75	-3.19	-30.01	-4.53	-4.54	1380.70
115	64	51		GD	2.16		-15.04	-1.78	-28.35	-5.22	-3.56	1392.55
114	65	49		TB	-8.92		-12.08	-3.87	-26.68	-6.14	-2.82	1402.85
113	66	47		DY	-19.30		-13.46	-2.71	-25.10	-7.09	-2.19	1412.44
112	67	45		HO	-27.82		-10.45	-4.82	-23.47	-8.18	-1.64	1420.18
111	68	43		ER	-35.43		-11.65	-3.79	-21.66	-9.10	-0.75	1427.01
110	69	41		TM	-41.25		-8.84	-5.75	-20.05	-10.27	-0.32	1432.05
109	70	39		YB	-46.00		-9.70	-4.97	-18.10	-11.41	0.49	1436.01
108	71	37		LU	-48.83	0.10	-7.02	-6.88	-16.28	-12.67	1.05	1438.06
107	72	35		HF	-50.31	-0.04	-7.59	-6.23	-14.16	-13.67	2.17	1438.76
106	73	33		TA	-50.20	-0.05	-5.33	-7.88	-12.48	-14.81	2.71	1437.87
105	74	31		W	-48.98		-5.88	-7.37	-10.77	-16.07	3.16	1435.87
104	75	29		RE	-45.75		-3.36	-9.14	-8.80	-17.07	4.13	1431.86
103	76	27		OS	-41.49		-4.09	-8.38	-7.01	-18.24	4.76	1426.81
102	77	25		IR	-35.14		-1.24	-10.31	-4.89	-19.19	5.92	1419.68
101	78	23		PT	-28.05		-2.43	-9.32	-3.23	-20.17	6.60	1411.80
99	80	19		HG	-9.44		-0.58	-10.41	0.00	-22.32	7.68	1391.63

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
122	58	64	180	CE	104.46		-20.44	-0.54	-38.89	0.52	-8.25	1303.02
120	60	60		ND	66.58		-18.85	-1.56	-35.79	-1.38	-7.05	1339.33
119	61	58		RM	51.58		-15.78	-0.32	-34.14	-2.47	-6.49	1353.55
118	62	56		SM	33.91		-17.20	-2.65	-32.49	-3.48	-5.85	1370.44
117	63	54		EU	21.53		-14.24	-1.33	-30.95	-4.52	-5.35	1382.03
116	64	52		GD	6.55		-15.54	-3.68	-29.28	-5.47	-4.63	1396.24
115	65	50		TB	-3.13		-12.58	-2.28	-27.62	-6.15	-3.65	1405.13
114	66	48		DY	-15.59		-13.96	-4.37	-26.04	-7.08	-3.00	1416.81
113	67	46		HO	-22.95		-10.94	-3.21	-24.41	-8.03	-2.32	1423.39
112	68	44		ER	-32.67		-12.14	-5.32	-22.59	-9.11	-1.59	1432.32
111	69	42		TM	-37.47		-9.34	-4.29	-20.99	-10.03	-0.90	1436.34
110	70	40		YB	-44.16		-10.20	-6.24	-19.04	-11.20	-0.12	1442.25
109	71	38		LU	-46.22	0.01	-7.51	-5.46	-17.21	-12.34	0.56	1443.52
108	72	36		HF	-49.62	-0.09	-8.08	-7.38	-15.10	-13.61	1.42	1446.14
107	73	34		TA	-48.85	0.01	-5.83	-6.72	-13.41	-14.60	2.10	1444.59
106	74	32		W	-49.29	0.08	-6.38	-8.38	-11.71	-15.75	2.66	1444.25
105	75	30		RE	-45.55		-3.85	-7.87	-9.74	-17.00	3.38	1439.72
104	76	28		OS	-43.05		-4.58	-9.63	-7.94	-18.01	4.17	1436.44
103	77	26		IR	-35.94		-1.74	-8.87	-5.83	-19.18	5.12	1428.55
102	78	24		PT	-30.77		-2.92	-10.80	-4.17	-20.12	5.83	1422.60
101	79	22		AU	-21.11		-0.36	-9.82	-2.79	-21.11	6.22	1412.16
100	80	20		HG	-13.15		-1.07	-11.79	-0.94	-22.19	6.99	1403.41
124	57	67	181	LA	134.98		-19.27	-0.08	-41.31	1.23	-10.03	1281.35
122	59	63		PR	93.99		-17.75	-0.86	-38.19	-0.30	-8.44	1320.77
120	61	59		RM	57.77		-16.10	-1.88	-34.96	-2.20	-7.11	1355.43
119	62	57		SM	41.34		-17.52	-0.64	-33.30	-3.29	-6.54	1371.08
118	63	55		EU	26.63		-14.56	-2.97	-31.76	-4.30	-6.02	1385.00
117	64	53		GD	12.97		-15.86	-1.65	-30.10	-5.33	-5.38	1397.89
116	65	51		TB	0.94		-12.90	-4.00	-28.43	-6.28	-4.67	1409.14
115	66	49		DY	-10.12		-14.28	-2.60	-26.86	-6.97	-3.77	1419.41
114	67	47		HO	-19.57		-11.27	-4.69	-25.22	-7.90	-3.07	1428.08
113	68	45		ER	-28.13		-12.47	-3.53	-23.41	-8.85	-2.21	1435.85
112	69	43		TM	-35.04		-9.66	-5.64	-21.80	-9.93	-1.68	1441.98
111	70	41		YB	-40.70		-10.52	-4.61	-19.85	-10.85	-0.66	1446.86
110	71	39		LU	-44.71		-7.83	-6.56	-18.03	-12.02	-0.00	1450.08
109	72	37		HF	-47.33	0.08	-8.40	-5.78	-15.91	-13.16	0.98	1451.92
108	73	35		TA	-48.48	-0.05	-6.15	-7.70	-14.23	-14.42	1.40	1452.29
107	74	33		W	-48.26	-0.02	-6.70	-7.05	-12.53	-15.42	2.10	1451.29
106	75	31		RE	-46.17		-4.18	-8.70	-10.55	-16.56	2.93	1448.42
105	76	29		OS	-43.17		-4.91	-8.19	-8.76	-17.82	3.47	1444.63
104	77	27		IR	-37.82		-2.06	-9.95	-6.64	-18.82	4.58	1438.50
103	78	25		PT	-31.90		-3.25	-9.19	-4.98	-19.99	5.07	1431.79
102	79	23		AU	-24.16		-0.68	-11.12	-3.60	-20.94	5.51	1423.28
101	80	21		HG	-15.22		-1.40	-10.14	-1.75	-21.93	6.37	1413.55
124	58	66	182	CE	121.33		-20.94	-0.27	-40.21	0.73	-9.87	1302.29
122	60	62		ND	81.92		-19.36	-1.04	-37.11	-0.80	-8.30	1340.13
120	62	58		SM	47.35		-17.71	-2.06	-33.81	-2.70	-6.89	1373.14
119	63	56		EU	33.88		-14.75	-0.82	-32.27	-3.79	-6.45	1385.82
118	64	54		GD	17.88		-16.04	-3.16	-30.61	-4.81	-5.79	1401.04
117	65	52		TB	7.17		-13.08	-1.83	-28.94	-5.84	-5.16	1410.97
116	66	50		DY	-6.24		-14.46	-4.19	-27.36	-6.79	-4.53	1423.60
115	67	48		HO	-14.28		-11.45	-2.78	-25.73	-7.47	-3.58	1430.86
114	68	46		ER	-24.93		-12.65	-4.87	-23.92	-8.40	-2.70	1440.73
113	69	44		TM	-30.68		-9.84	-3.71	-22.31	-9.35	-2.04	1445.69
112	70	42		YB	-38.45		-10.70	-5.82	-20.36	-10.43	-1.18	1452.68
111	71	40		LU	-41.43		-8.02	-4.79	-18.54	-11.36	-0.27	1454.88
110	72	38		HF	-46.00	-0.08	-8.59	-6.75	-16.42	-12.53	0.67	1458.67
109	73	36		TA	-46.37	0.04	-6.33	-5.97	-14.74	-13.67	1.22	1458.26
108	74	34		W	-48.07	0.08	-6.88	-7.88	-13.03	-14.93	1.66	1459.17
107	75	32		RE	-45.33	-0.04	-4.36	-7.23	-11.06	-15.93	2.63	1455.65
106	76	30		OS	-43.98		-5.09	-8.88	-9.26	-17.07	3.28	1453.51
105	77	28		IR	-38.12		-2.24	-8.37	-7.15	-18.33	4.14	1446.87
104	78	26		PT	-33.96		-3.43	-10.14	-5.49	-19.33	4.80	1441.93
103	79	24		AU	-25.47		-0.86	-9.38	-4.11	-20.50	5.01	1432.66
102	80	22		HG	-18.45		-1.58	-11.31	-2.26	-21.45	5.91	1424.86

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
124	59	65	183	PR	110.43		-18.18	-0.51	-39.13	0.30	-9.60	1320.48
122	61	61		RM	72.68		-16.53	-1.29	-35.89	-1.23	-7.90	1356.67
121	62	59		SM	55.23		-17.95	-0.19	-34.24	-2.25	-7.26	1373.33
120	63	57		EU	39.65		-14.99	-2.31	-32.70	-3.13	-6.60	1388.13
119	64	55		GD	24.89		-16.29	-1.07	-31.04	-4.22	-6.03	1402.11
118	65	53		TB	11.84		-13.33	-3.40	-29.37	-5.24	-5.37	1414.37
117	66	51		DY	-0.25		-14.71	-2.08	-27.79	-6.27	-4.83	1425.68
116	67	49		HO	-10.64		-11.69	-4.43	-26.16	-7.22	-4.14	1435.29
115	68	47		ER	-19.89		-12.90	-3.03	-24.35	-7.90	-3.02	1443.76
114	69	45		TM	-27.73		-10.09	-5.12	-22.74	-8.83	-2.34	1450.81
113	70	43		YB	-34.34		-10.95	-3.96	-20.79	-9.78	-1.34	1456.64
112	71	41		LU	-39.43		-8.26	-6.07	-18.97	-10.86	-0.60	1460.95
111	72	39		HF	-42.97	0.03	-8.83	-5.04	-16.85	-11.79	0.60	1463.71
110	73	37		TA	-45.29	-0.09	-6.58	-6.99	-15.17	-12.96	1.11	1465.25
109	74	35		W	-46.21	0.06	-7.13	-6.21	-13.46	-14.09	1.67	1465.39
108	75	33		RE	-45.39	0.01	-4.61	-8.13	-11.49	-15.36	2.39	1463.78
107	76	31		OS	-43.38		-5.34	-7.48	-9.69	-16.36	3.18	1460.99
106	77	29		IR	-39.18		-2.49	-9.13	-7.58	-17.50	4.15	1456.00
105	78	27		PT	-34.51		-3.68	-8.62	-5.92	-18.76	4.56	1450.55
104	79	25		AU	-27.78		-1.11	-10.38	-4.54	-19.76	4.93	1443.04
103	80	23		HG	-20.01		-1.83	-9.62	-2.69	-20.93	5.62	1434.48
124	60	64	184	ND	97.58		-20.14	-1.04	-38.32	-0.48	-9.30	1340.61
122	62	60		SM	61.48		-18.48	-1.82	-35.02	-2.01	-7.53	1375.15
121	63	58		EU	46.99		-15.53	-0.72	-33.48	-3.03	-7.01	1388.86
120	64	56		GD	30.12		-16.82	-2.84	-31.81	-3.91	-6.22	1404.95
119	65	54		TB	18.31		-13.86	-1.60	-30.15	-5.00	-5.65	1415.97
118	66	52		DY	3.89		-15.24	-3.93	-28.57	-6.01	-5.08	1429.61
117	67	50		HO	-5.19		-12.23	-2.61	-26.94	-7.05	-4.48	1437.91
116	68	48		ER	-16.78		-13.43	-4.97	-25.12	-8.00	-3.62	1448.72
115	69	46		TM	-23.22		-10.62	-3.56	-23.52	-8.68	-2.69	1454.38
114	70	44		YB	-31.92		-11.48	-5.65	-21.57	-9.61	-1.68	1462.29
113	71	42		LU	-35.85		-8.79	-4.49	-19.74	-10.56	-0.80	1465.44
112	72	40		HF	-41.50		-9.36	-6.60	-17.63	-11.64	0.24	1470.31
111	73	38		TA	-42.80	0.07	-7.11	-5.57	-15.94	-12.56	1.00	1470.82
110	74	36		W	-45.67	-0.05	-7.66	-7.52	-14.24	-13.73	1.53	1472.91
109	75	34		RE	-44.06	-0.07	-5.14	-6.74	-12.27	-14.87	2.37	1470.52
108	76	32		OS	-43.97	0.04	-5.87	-8.66	-10.47	-16.14	2.89	1469.65
107	77	30		IR	-39.11		-3.02	-8.01	-8.36	-17.13	4.01	1464.01
106	78	28		PT	-36.10		-4.21	-9.66	-6.70	-18.28	4.53	1460.21
105	79	26		AU	-28.86		-1.64	-9.15	-5.32	-19.53	4.65	1452.19
104	80	24		HG	-22.85		-2.36	-10.92	-3.47	-20.54	5.50	1445.40
102	82	20		PB	-3.26		-0.20	-12.08	0.61	-22.65	7.46	1424.25
124	61	63	185	RM	87.68		-17.20	-1.17	-37.33	-1.14	-8.74	1357.81
123	62	61		SM	69.46		-18.61	-0.10	-35.68	-1.92	-7.86	1375.25
122	63	59		EU	53.12		-15.66	-1.95	-34.14	-2.67	-7.08	1390.81
121	64	57		GD	37.33		-16.95	-0.85	-32.47	-3.69	-6.43	1405.81
120	65	55		TB	23.42		-13.99	-2.97	-30.81	-4.57	-5.64	1418.94
119	66	53		DY	10.23		-15.37	-1.73	-29.23	-5.66	-5.16	1431.34
118	67	51		HO	-1.18		-12.36	-4.06	-27.60	-6.67	-4.54	1441.97
117	68	49		ER	-11.45		-13.56	-2.74	-25.78	-7.71	-3.76	1451.46
116	69	47		TM	-20.24		-10.75	-5.10	-24.18	-8.66	-3.10	1459.47
115	70	45		YB	-27.54		-11.61	-3.69	-22.23	-9.34	-1.84	1465.99
114	71	43		LU	-33.56		-8.92	-5.78	-20.41	-10.27	-0.94	1471.22
113	72	41		HF	-38.05		-9.49	-4.62	-18.29	-11.22	0.23	1474.93
112	73	39		TA	-41.45	-0.05	-7.24	-6.73	-16.60	-12.30	0.83	1477.55
111	74	37		W	-43.30	-0.00	-7.79	-5.70	-14.90	-13.22	1.61	1478.61
110	75	35		RE	-43.64	0.08	-5.27	-7.65	-12.93	-14.40	2.41	1478.18
109	76	33		OS	-42.77	-0.03	-6.00	-6.87	-11.13	-15.53	3.07	1476.52
108	77	31		IR	-39.83		-3.15	-8.79	-9.02	-16.80	3.92	1472.80
107	78	29		PT	-36.16		-4.34	-8.14	-7.36	-17.80	4.58	1468.35
106	79	27		AU	-30.58		-1.77	-9.79	-5.98	-18.94	4.82	1461.98
105	80	25		HG	-24.06		-2.49	-9.28	-4.13	-20.19	5.41	1454.68
103	82	21		PB	-5.47		-0.33	-10.28	-0.05	-22.37	7.32	1434.53

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
126	60	66	186	ND	113.79		-20.86	-0.49	-39.70	0.06	-9.96	1340.55
125	61	64		RM	95.71		-17.79	-0.04	-38.06	-1.21	-9.58	1357.84
124	62	62		SM	75.76		-19.21	-1.77	-36.40	-1.86	-8.59	1377.02
123	63	60		EU	60.50		-16.25	-0.69	-34.86	-2.64	-7.82	1391.50
122	64	58		GD	42.86		-17.54	-2.54	-33.20	-3.39	-6.91	1408.35
121	65	56		TB	30.04		-14.58	-1.45	-31.53	-4.42	-6.27	1420.39
120	66	54		DY	14.74		-15.96	-3.56	-29.95	-5.29	-5.57	1434.91
119	67	52		HO	4.57		-12.95	-2.32	-28.32	-6.38	-5.03	1444.29
118	68	50		ER	-8.04		-14.15	-4.66	-26.51	-7.40	-4.22	1456.12
117	69	48		TM	-15.51		-11.34	-3.33	-24.90	-8.43	-3.65	1462.80
116	70	46		YB	-25.16		-12.20	-5.69	-22.95	-9.38	-2.65	1471.67
115	71	44		LU	-29.77		-9.52	-4.28	-21.13	-10.06	-1.51	1475.50
114	72	42		HF	-36.35		-10.09	-6.37	-19.01	-10.99	-0.32	1481.30
113	73	40		TA	-38.60	0.14	-7.83	-5.21	-17.33	-11.94	0.41	1482.76
112	74	38		W	-42.55	-0.11	-8.38	-7.32	-15.62	-13.02	1.03	1485.93
111	75	36		RE	-41.87	0.03	-5.86	-6.30	-13.65	-13.95	2.08	1484.47
110	76	34		OS	-42.94	0.03	-6.59	-8.25	-11.86	-15.12	2.71	1484.77
109	77	32		IR	-39.23	-0.09	-3.74	-7.47	-9.74	-16.26	3.68	1480.26
108	78	30		PT	-37.47		-4.93	-9.38	-8.08	-17.52	4.08	1477.73
107	79	28		AU	-31.23		-2.36	-8.73	-6.70	-18.52	4.46	1470.71
106	80	26		HG	-26.37		-3.08	-10.38	-4.85	-19.66	5.17	1465.06
105	81	24		TL	-17.20		-0.44	-9.87	-2.92	-20.92	5.84	1455.11
104	82	22		PB	-9.04		-0.93	-11.64	-0.77	-21.92	6.99	1446.17
126	61	65	187	RM	103.23		-17.85	-0.56	-38.71	-0.59	-9.63	1358.40
125	62	63		SM	83.73		-19.27	-0.10	-37.06	-1.87	-9.25	1377.12
124	63	61		EU	66.74		-16.31	-1.83	-35.52	-2.52	-8.37	1393.33
123	64	59		GD	50.18		-17.61	-0.76	-33.85	-3.30	-7.48	1409.10
122	65	57		TB	35.51		-14.65	-2.61	-32.19	-4.05	-6.56	1422.99
121	66	55		DY	21.30		-16.03	-1.51	-30.61	-5.07	-6.01	1436.42
120	67	53		HO	9.02		-13.01	-3.63	-28.98	-5.95	-5.25	1447.92
119	68	51		ER	-2.35		-14.21	-2.39	-27.16	-7.04	-4.53	1458.51
118	69	49		TM	-12.15		-11.41	-4.72	-25.56	-8.05	-3.94	1467.52
117	70	47		YB	-20.49		-12.27	-3.40	-23.61	-9.09	-3.02	1475.07
116	71	45		LU	-27.45		-9.58	-5.75	-21.79	-10.04	-2.15	1481.26
115	72	43		HF	-32.63		-10.15	-4.35	-19.67	-10.72	-0.71	1485.65
114	73	41		TA	-36.96		-7.90	-6.44	-17.98	-11.65	0.04	1489.20
113	74	39		W	-39.75	0.07	-8.45	-5.28	-16.28	-12.60	0.79	1491.21
112	75	37		RE	-41.18	-0.04	-5.92	-7.39	-14.31	-13.68	1.69	1491.86
111	76	35		OS	-41.23	-0.09	-6.65	-6.36	-12.51	-14.60	2.56	1491.12
110	77	33		IR	-39.46	0.07	-3.81	-8.31	-10.40	-15.78	3.50	1488.57
109	78	31		PT	-36.93		-4.99	-7.53	-8.74	-16.91	4.02	1485.26
108	79	29		AU	-32.61		-2.43	-9.45	-7.36	-18.18	4.14	1480.16
107	80	27		HG	-27.09		-3.15	-8.79	-5.51	-19.18	4.99	1473.85
106	81	25		TL	-19.58		-0.50	-10.45	-3.58	-20.32	5.78	1465.56
105	82	23		PB	-10.91		-0.99	-9.94	-1.43	-21.57	6.68	1456.10
126	62	64	188	SM	90.90		-19.62	-0.90	-37.47	-1.00	-9.11	1378.02
125	63	62		EU	74.36		-16.66	-0.44	-35.93	-2.27	-8.84	1393.77
124	64	60		GD	56.08		-17.95	-2.17	-34.26	-2.93	-7.83	1411.28
123	65	58		TB	42.48		-14.99	-1.10	-32.60	-3.71	-6.94	1424.09
122	66	56		DY	26.42		-16.37	-2.95	-31.02	-4.46	-6.12	1439.37
121	67	54		HO	15.23		-13.36	-1.86	-29.39	-5.48	-5.51	1449.77
120	68	52		ER	1.75		-14.56	-3.97	-27.57	-6.36	-4.57	1462.48
119	69	50		TM	-6.81		-11.75	-2.73	-25.97	-7.45	-4.05	1470.26
118	70	48		YB	-17.48		-12.61	-5.06	-24.02	-8.46	-3.12	1480.14
117	71	46		LU	-23.12		-9.93	-3.74	-22.19	-9.50	-2.33	1485.00
116	72	44		HF	-30.66		-10.49	-6.10	-20.08	-10.45	-1.16	1491.75
115	73	42		TA	-33.58		-8.24	-4.69	-18.39	-11.13	-0.16	1493.90
114	74	40		W	-38.47	-0.10	-8.79	-6.78	-16.69	-12.06	0.61	1497.99
113	75	38		RE	-38.73	0.06	-6.27	-5.62	-14.72	-13.01	1.64	1497.48
112	76	36		OS	-40.89	0.02	-7.00	-7.73	-12.92	-14.09	2.35	1498.86
111	77	34		IR	-38.10	-0.02	-4.15	-6.70	-10.81	-15.01	3.54	1495.28
110	78	32		PT	-37.51	0.06	-5.34	-8.65	-9.15	-16.18	4.03	1493.91
109	79	30		AU	-32.41		-2.77	-7.87	-7.77	-17.32	4.27	1488.03
108	80	28		HG	-28.81		-3.49	-9.79	-5.92	-18.59	4.86	1483.65
107	81	26		TL	-20.64		-0.84	-9.14	-3.99	-19.58	5.79	1474.70
106	82	24		PB	-13.62		-1.34	-10.79	-1.83	-20.73	6.80	1466.89

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
126	63	63	189	EU	81.07		-17.12	-1.36	-36.73	-1.81	-9.03	1395.13
125	64	61		GD	63.24		-18.41	-0.90	-35.07	-3.08	-8.64	1412.18
124	65	59		TB	47.91		-15.45	-2.63	-33.40	-3.73	-7.63	1426.73
123	66	57		DY	32.93		-16.83	-1.56	-31.82	-4.51	-6.82	1440.93
122	67	55		HO	19.89		-13.82	-3.41	-30.19	-5.27	-5.95	1453.18
121	68	53		ER	7.50		-15.02	-2.31	-28.38	-6.29	-5.15	1464.79
120	69	51		TM	-3.17		-12.21	-4.43	-26.77	-7.16	-4.42	1474.69
119	70	49		YB	-12.60		-13.07	-3.19	-24.82	-8.26	-3.57	1483.33
118	71	47		LU	-20.57		-10.39	-5.52	-23.00	-9.27	-2.76	1490.52
117	72	45		HF	-26.79		-10.95	-4.20	-20.88	-10.30	-1.67	1495.95
116	73	43		TA	-32.07		-8.70	-6.56	-19.20	-11.25	-0.94	1500.45
115	74	41		W	-35.55		-9.25	-5.15	-17.49	-11.94	0.08	1503.15
114	75	39		RE	-37.90	-0.06	-6.73	-7.24	-15.52	-12.86	1.13	1504.72
113	76	37		OS	-38.90	-0.06	-7.46	-6.08	-13.73	-13.81	1.97	1504.94
112	77	35		IR	-38.22	0.05	-4.61	-8.19	-11.61	-14.90	3.00	1503.47
111	78	33		PT	-36.61	0.08	-5.80	-7.16	-9.95	-15.82	3.74	1501.08
110	79	31		AU	-33.46		-3.23	-9.11	-8.57	-16.99	3.95	1497.14
109	80	29		HG	-29.07		-3.95	-8.33	-6.72	-18.13	4.66	1491.98
108	81	27		TL	-22.83		-1.30	-10.25	-4.79	-19.39	5.33	1484.95
107	82	25		PB	-15.15		-1.79	-9.60	-2.64	-20.39	6.48	1476.49
126	64	62	190	GD	69.54		-18.82	-1.78	-35.94	-2.68	-8.65	1413.96
125	65	60		TB	54.67		-15.86	-1.32	-34.27	-3.95	-8.25	1428.05
124	66	58		DY	37.96		-17.25	-3.05	-32.70	-4.61	-7.33	1443.97
123	67	56		HO	25.99		-14.23	-1.97	-31.06	-5.38	-6.47	1455.16
122	68	54		ER	11.75		-15.43	-3.82	-29.25	-6.14	-5.42	1468.62
121	69	52		TM	2.17		-12.62	-2.73	-27.64	-7.16	-4.83	1477.42
120	70	50		YB	-9.37		-13.49	-4.85	-25.70	-8.04	-3.76	1488.17
119	71	48		LU	-16.11		-10.80	-3.60	-23.87	-9.13	-3.03	1494.13
118	72	46		HF	-24.65		-11.37	-5.94	-21.75	-10.14	-1.92	1501.89
117	73	44		TA	-28.61		-9.12	-4.62	-20.07	-11.17	-1.27	1505.07
116	74	42		W	-34.44		-9.66	-6.97	-18.37	-12.12	-0.52	1510.12
115	75	40		RE	-35.40	0.04	-7.14	-5.57	-16.39	-12.81	0.77	1510.29
114	76	38		OS	-38.49	0.05	-7.87	-7.66	-14.60	-13.74	1.64	1512.59
113	77	36		IR	-36.64	-0.15	-5.03	-6.49	-12.48	-14.69	2.80	1509.96
112	78	34		PT	-37.14	0.16	-6.21	-8.61	-10.83	-15.77	3.38	1509.68
111	79	32		AU	-32.96	-0.09	-3.64	-7.58	-9.44	-16.69	3.84	1504.72
110	80	30		HG	-30.53		-4.36	-9.53	-7.59	-17.86	4.52	1501.51
109	81	28		TL	-23.50		-1.72	-8.75	-5.67	-19.00	5.31	1493.70
108	82	26		PB	-17.74		-2.21	-10.67	-3.51	-20.26	6.20	1487.16
128	63	65	191	EU	98.51		-17.94	-0.03	-38.43	1.29	-7.14	1393.84
126	65	61		TB	60.56		-16.27	-2.18	-35.09	-3.50	-8.60	1430.23
125	66	59		DY	44.30		-17.65	-1.72	-33.52	-4.77	-8.30	1445.70
124	67	57		HO	30.61		-14.64	-3.45	-31.88	-5.43	-7.32	1458.61
123	68	55		ER	17.44		-15.84	-2.38	-30.07	-6.20	-6.29	1471.00
122	69	53		TM	6.01		-13.03	-4.23	-28.46	-6.96	-5.43	1481.65
121	70	51		YB	-4.43		-13.89	-3.14	-26.52	-7.98	-4.51	1491.31
120	71	49		LU	-13.29		-11.21	-5.25	-24.69	-8.86	-3.56	1499.38
119	72	47		HF	-20.59		-11.77	-4.01	-22.57	-9.95	-2.53	1505.90
118	73	45		TA	-26.89		-9.52	-6.34	-20.89	-10.96	-1.86	1511.41
117	74	43		W	-31.40		-10.07	-5.02	-19.19	-11.99	-1.19	1515.14
116	75	41		RE	-34.70		-7.55	-7.38	-17.21	-12.94	-0.17	1517.67
115	76	39		OS	-36.39	-0.03	-8.28	-5.97	-15.42	-13.63	0.94	1518.57
114	77	37		IR	-36.63	0.04	-5.43	-8.06	-13.31	-14.56	2.13	1518.03
113	78	35		PT	-35.97	-0.06	-6.62	-6.90	-11.65	-15.51	2.84	1516.58
112	79	33		AU	-33.90	0.06	-4.05	-9.01	-10.26	-16.59	3.14	1513.73
111	80	31		HG	-30.44		-4.77	-7.98	-8.41	-17.51	4.07	1509.49
110	81	29		TL	-25.36		-2.12	-9.93	-6.49	-18.68	4.82	1503.63
109	82	27		PB	-18.83		-2.61	-9.15	-4.33	-19.82	5.84	1496.31
128	64	64	192	GD	86.37		-19.43	-0.23	-37.37	0.69	-6.96	1413.27
126	66	60		DY	49.99		-17.85	-2.38	-34.12	-4.11	-8.51	1448.08
125	67	58		HO	36.76		-14.84	-1.92	-32.49	-5.38	-8.15	1460.54
124	68	56		ER	21.86		-16.04	-3.65	-30.68	-6.04	-6.99	1474.65
123	69	54		TM	11.50		-13.23	-2.58	-29.07	-6.81	-6.16	1484.23
122	70	52		YB	-0.79		-14.09	-4.43	-27.12	-7.57	-4.96	1495.74
121	71	50		LU	-8.55		-11.41	-3.33	-25.30	-8.59	-4.16	1502.71
120	72	48		HF	-17.97		-11.97	-5.45	-23.18	-9.46	-2.92	1511.35
119	73	46		TA	-23.03		-9.72	-4.21	-21.50	-10.56	-2.33	1515.62
118	74	44		W	-29.87		-10.27	-6.54	-19.79	-11.57	-1.64	1521.68
117	75	42		RE	-31.86		-7.75	-5.22	-17.82	-12.60	-0.70	1522.89
116	76	40		OS	-35.89	0.02	-8.48	-7.58	-16.03	-13.55	0.15	1526.14
115	77	38		IR	-34.73	0.01	-5.63	-6.17	-13.91	-14.24	1.58	1524.20
114	78	36		PT	-36.16	0.03	-6.82	-8.26	-12.25	-15.16	2.31	1524.85
113	79	34		AU	-32.93	0.02	-4.25	-7.10	-10.87	-16.11	2.74	1520.83
112	80	32		HG	-31.58	-0.06	-4.97	-9.21	-9.02	-17.20	3.51	1518.70
111	81	30		TL	-25.48		-2.32	-8.18	-7.09	-18.12	4.51	1511.81
110	82	28		PB	-20.89		-2.81	-10.13	-4.94	-19.29	5.50	1506.44
108	84	24		PO	-2.30		-0.16	-11.27	0.87	-21.69	8.90	1486.29

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
128	65	63	193	TB	76.95		-16.71	-0.46	-36.14	0.25	-6.54	1429.98
126	67	59		HO	42.21		-15.07	-2.62	-32.92	-4.54	-8.13	1463.15
125	68	57		ER	27.77		-16.27	-2.16	-31.11	-5.81	-7.59	1476.81
124	69	55		TM	15.68		-13.46	-3.89	-29.50	-6.47	-6.64	1488.12
123	70	53		YB	4.46		-14.33	-2.82	-27.56	-7.25	-5.47	1498.55
122	71	51		LU	-5.14		-11.64	-4.67	-25.73	-8.00	-4.40	1507.38
121	72	49		HF	-13.47		-12.21	-3.57	-23.61	-9.02	-3.30	1514.92
120	73	47		TA	-20.64		-9.96	-5.69	-21.93	-9.90	-2.49	1521.31
119	74	45		W	-26.24		-10.51	-4.45	-20.23	-10.99	-1.88	1526.13
118	75	43		RE	-30.56		-7.98	-6.78	-18.25	-12.00	-0.92	1529.67
117	76	41		OS	-33.28	0.04	-8.71	-5.46	-16.46	-13.04	-0.16	1531.60
116	77	39		IR	-34.47	-0.02	-5.87	-7.81	-14.35	-13.98	1.01	1532.01
115	78	37		PT	-34.50	-0.09	-7.05	-6.41	-12.69	-14.67	1.98	1531.25
114	79	35		AU	-33.36	-0.05	-4.49	-8.50	-11.30	-15.60	2.43	1529.33
113	80	33		HG	-30.85	0.12	-5.20	-7.34	-9.45	-16.55	3.34	1526.04
112	81	31		TL	-26.85		-2.56	-9.45	-7.53	-17.63	4.18	1521.26
111	82	29		PB	-21.24		-3.05	-8.42	-5.37	-18.55	5.41	1514.86
109	84	25		PO	-3.82		-0.39	-9.59	0.43	-20.86	8.91	1495.88
130	64	66	194	GD	103.30		-20.16	-0.41	-38.53	0.79	-8.28	1412.48
128	66	62		DY	65.66		-18.58	-0.96	-35.29	-0.48	-6.30	1448.56
127	67	60		HO	50.27		-15.57	-0.01	-33.65	-2.63	-6.83	1463.17
126	68	58		ER	32.73		-16.77	-3.11	-31.84	-5.27	-7.65	1479.92
125	69	56		TM	21.10		-13.96	-2.65	-30.23	-6.54	-7.32	1490.77
124	70	54		YB	8.15		-14.82	-4.38	-28.29	-7.20	-6.03	1502.94
123	71	52		LU	-0.38		-12.13	-3.31	-26.46	-7.97	-4.98	1510.69
122	72	50		HF	-10.56		-12.70	-5.16	-24.34	-8.73	-3.61	1520.08
121	73	48		TA	-16.63		-10.45	-4.06	-22.66	-9.75	-2.95	1525.37
120	74	46		W	-24.35		-11.00	-6.18	-20.96	-10.63	-2.13	1532.31
119	75	44		RE	-27.43		-8.48	-4.94	-18.98	-11.72	-1.24	1534.61
118	76	42		OS	-32.48	-0.09	-9.21	-7.27	-17.19	-12.73	-0.46	1538.87
117	77	40		IR	-32.35	0.13	-6.36	-5.95	-15.08	-13.76	0.62	1537.96
116	78	38		PT	-34.73	-0.01	-7.55	-8.31	-13.42	-14.71	1.33	1539.56
115	79	36		AU	-32.19	0.02	-4.98	-6.90	-12.03	-15.40	2.03	1536.23
114	80	34		HG	-31.77	0.09	-5.70	-8.99	-10.18	-16.33	2.95	1535.03
113	81	32		TL	-26.61	-0.13	-3.05	-7.83	-8.26	-17.28	3.93	1529.09
112	82	30		PB	-23.11		-3.54	-9.94	-6.10	-18.36	5.00	1524.80
110	84	26		PO	-6.61		-0.89	-10.86	-0.30	-20.45	8.71	1506.74
130	65	65	195	TB	93.06		-17.53	-0.74	-37.69	-0.04	-7.88	1430.01
128	67	61		HO	57.05		-15.90	-1.29	-34.48	-1.30	-5.93	1464.46
127	68	59		ER	40.45		-17.10	-0.35	-32.67	-3.46	-6.28	1480.27
126	69	57		TM	25.73		-14.29	-3.45	-31.06	-6.10	-7.31	1494.22
125	70	55		YB	13.23		-15.16	-2.99	-29.11	-7.37	-6.63	1505.93
124	71	53		LU	2.97		-12.47	-4.72	-27.29	-8.03	-5.46	1515.41
123	72	51		HF	-6.13		-13.04	-3.64	-25.17	-8.80	-4.12	1523.73
122	73	49		TA	-14.06		-10.79	-5.49	-23.49	-9.56	-3.19	1530.87
121	74	47		W	-20.68		-11.33	-4.40	-21.79	-10.58	-2.51	1536.71
120	75	45		RE	-25.88		-8.81	-6.52	-19.81	-11.46	-1.41	1541.12
119	76	43		OS	-29.68	0.12	-9.54	-5.28	-18.02	-12.55	-0.71	1544.15
118	77	41		IR	-31.89	-0.11	-6.70	-7.61	-15.90	-13.56	0.39	1545.57
117	78	39		PT	-32.95	-0.17	-7.88	-6.29	-14.24	-14.59	1.02	1545.85
116	79	37		AU	-32.76	-0.20	-5.31	-8.64	-12.86	-15.54	1.45	1544.87
115	80	35		HG	-30.93	0.16	-6.03	-7.24	-11.01	-16.23	2.61	1542.27
114	81	33		TL	-27.86	0.23	-3.39	-9.33	-9.09	-17.16	3.61	1538.42
113	82	31		PB	-23.20		-3.88	-8.16	-6.93	-18.11	4.82	1532.97
112	83	29		BI	-16.06		-0.24	-10.28	-3.78	-19.19	6.88	1525.04
111	84	27		PO	-7.79		-1.22	-9.25	-1.13	-20.11	8.62	1515.99
132	64	68	196	GD	120.48		-20.65	-0.06	-39.85	1.03	-9.21	1411.45
130	66	64		DY	81.27		-19.08	-0.90	-36.61	-0.53	-7.52	1449.09
128	68	60		ER	47.07		-17.26	-1.45	-33.16	-1.80	-5.34	1481.72
127	69	58		TM	33.29		-14.45	-0.51	-31.56	-3.96	-5.89	1494.72
126	70	56		YB	17.70		-15.32	-3.61	-29.61	-6.59	-6.58	1509.53
125	71	54		LU	7.89		-12.63	-3.15	-27.79	-7.87	-6.03	1518.55
124	72	52		HF	-2.94		-13.20	-4.88	-25.67	-8.52	-4.57	1528.61
123	73	50		TA	-9.79		-10.95	-3.80	-23.98	-9.30	-3.66	1534.67
122	74	48		W	-18.26		-11.50	-5.65	-22.28	-10.05	-2.72	1542.36
121	75	46		RE	-22.36		-8.97	-4.56	-20.31	-11.07	-1.76	1545.68
120	76	44		OS	-28.29		-9.70	-6.68	-18.51	-11.95	-0.84	1550.83
119	77	42		IR	-29.25	-0.02	-6.86	-5.44	-16.40	-13.04	0.18	1551.01
118	78	40		PT	-32.64	-0.01	-8.04	-7.77	-14.74	-14.06	0.82	1553.61
117	79	38		AU	-31.13	0.02	-5.47	-6.45	-13.36	-15.09	1.17	1551.32
116	80	36		HG	-31.66	0.18	-6.19	-8.80	-11.51	-16.04	2.08	1551.07
115	81	34		TL	-27.19	0.05	-3.55	-7.40	-9.58	-16.72	3.32	1545.81
114	82	32		PB	-24.61	-0.20	-4.04	-9.49	-7.43	-17.65	4.54	1542.46
113	83	30		BI	-16.31		-0.40	-8.33	-4.28	-18.60	6.74	1533.37
112	84	28		PO	-10.15		-1.38	-10.44	-1.62	-19.68	8.31	1526.43
110	86	24		RN	9.16		-0.10	-11.36	1.19	-21.78	9.04	1505.55

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
132	65	67	197	TB	109.72		-18.05	-0.42	-38.70	0.51	-8.88	1429.50
130	67	63		HO	72.14		-16.42	-1.26	-35.49	-1.05	-7.23	1465.51
129	68	61		ER	55.00		-17.62	-0.14	-33.68	-1.59	-5.97	1481.86
128	69	59		TM	39.55		-14.81	-1.81	-32.07	-2.31	-5.08	1496.53
127	70	57		YB	24.91		-15.67	-0.86	-30.13	-4.47	-5.29	1510.40
126	71	55		LU	12.00		-12.98	-3.96	-28.30	-7.11	-6.10	1522.52
125	72	53		HF	1.63		-13.55	-3.50	-26.18	-8.38	-5.26	1532.11
124	73	51		TA	-6.95		-11.30	-5.23	-24.50	-9.04	-4.23	1539.91
123	74	49		W	-14.35		-11.85	-4.16	-22.80	-9.81	-3.30	1546.52
122	75	47		RE	-20.30		-9.33	-6.01	-20.82	-10.57	-2.08	1551.69
121	76	45		OS	-25.13		-10.06	-4.91	-19.03	-11.59	-1.31	1555.74
120	77	43		IR	-28.21	0.21	-7.21	-7.03	-16.91	-12.47	-0.07	1558.04
119	78	41		PT	-30.36	0.05	-8.40	-5.79	-15.26	-13.56	0.49	1559.40
118	79	39		AU	-31.18	-0.02	-5.83	-8.12	-13.87	-14.57	0.86	1559.44
117	80	37		HG	-30.39	0.01	-6.55	-6.80	-12.02	-15.60	1.68	1557.87
116	81	35		TL	-28.27	-0.07	-3.90	-9.16	-10.10	-16.55	2.66	1554.97
115	82	33		PB	-24.29	-0.16	-4.39	-7.75	-7.94	-17.24	4.13	1550.21
114	83	31		BI	-18.08		-0.76	-9.84	-4.79	-18.17	6.34	1543.21
113	84	29		PO	-10.76		-1.74	-8.68	-2.14	-19.12	8.05	1535.11
111	86	25		RN	7.47		-0.45	-9.76	0.68	-21.12	8.87	1515.31
134	64	70	198	GD	137.96		-21.52	-0.07	-41.24	1.34	-10.22	1410.11
132	66	66		DY	97.06		-19.94	-0.93	-37.99	-0.35	-8.67	1449.44
130	68	62		ER	61.30		-18.13	-1.77	-34.55	-1.91	-6.78	1483.64
129	69	60		TM	46.97		-15.32	-0.66	-32.94	-2.46	-5.72	1497.19
128	70	58		YB	30.66		-16.18	-2.32	-30.99	-3.18	-4.50	1512.71
127	71	56		LU	18.70		-13.50	-1.38	-29.17	-5.34	-4.83	1523.89
126	72	54		HF	5.23		-14.07	-4.47	-27.05	-7.98	-5.35	1536.58
125	73	52		TA	-2.90		-11.82	-4.02	-25.37	-9.25	-4.94	1543.92
124	74	50		W	-12.03		-12.36	-5.75	-23.67	-9.91	-3.89	1552.27
123	75	48		RE	-16.90		-9.84	-4.67	-21.69	-10.68	-2.69	1556.36
122	76	46		OS	-23.58		-10.57	-6.52	-19.90	-11.44	-1.65	1562.26
121	77	44		IR	-25.57	-0.06	-7.73	-5.43	-17.78	-12.46	-0.56	1563.46
120	78	42		PT	-29.83	0.07	-8.91	-7.54	-16.12	-13.33	0.22	1566.95
119	79	40		AU	-29.42	0.18	-6.34	-6.30	-14.74	-14.43	0.51	1565.75
118	80	38		HG	-30.96	0.01	-7.06	-8.64	-12.89	-15.44	1.35	1566.50
117	81	36		TL	-27.52	-0.01	-4.42	-7.32	-10.96	-16.47	2.24	1562.29
116	82	34		PB	-25.89	-0.19	-4.91	-9.67	-8.81	-17.42	3.45	1559.88
115	83	32		BI	-18.27	0.02	-1.27	-8.26	-5.66	-18.11	5.91	1551.48
114	84	30		PO	-13.04		-2.25	-10.36	-3.01	-19.04	7.64	1545.46
112	86	26		RN	4.24		-0.97	-11.30	-0.19	-21.07	8.42	1526.62
134	65	69	199	TB	126.44		-18.81	-0.31	-40.33	0.58	-9.83	1428.92
132	67	65		HO	87.17		-17.18	-1.18	-37.12	-1.11	-8.31	1466.62
131	68	63		ER	69.19		-18.38	-0.18	-35.31	-1.96	-7.34	1483.82
130	69	61		TM	53.02		-15.57	-2.02	-33.70	-2.67	-6.45	1499.20
129	70	59		YB	37.83		-16.43	-0.90	-31.75	-3.22	-5.05	1513.62
128	71	57		LU	24.20		-13.74	-2.57	-29.93	-3.94	-3.95	1526.46
127	72	55		HF	11.67		-14.31	-1.62	-27.81	-6.10	-3.98	1538.21
126	73	53		TA	0.45		-12.06	-4.72	-26.13	-8.74	-4.94	1548.64
125	74	51		W	-8.22		-12.61	-4.26	-24.42	-10.01	-4.51	1556.53
124	75	49		RE	-14.82		-10.09	-5.99	-22.45	-10.67	-3.19	1562.36
123	76	47		OS	-20.43		-10.82	-4.92	-20.66	-11.44	-2.17	1567.18
122	77	45		IR	-24.27		-7.97	-6.77	-18.54	-12.20	-0.81	1570.23
121	78	43		PT	-27.44	-0.03	-9.16	-5.67	-16.88	-13.22	-0.18	1572.62
120	79	41		AU	-29.13	-0.05	-6.59	-7.79	-15.50	-14.09	0.33	1573.54
119	80	39		HG	-29.43	0.11	-7.31	-6.55	-13.65	-15.19	1.09	1573.05
118	81	37		TL	-28.33	0.12	-4.66	-8.88	-11.72	-16.20	2.00	1571.17
117	82	35		PB	-25.38	-0.10	-5.15	-7.56	-9.57	-17.23	3.12	1567.44
116	83	33		BI	-20.12	-0.04	-1.52	-9.92	-6.42	-18.18	5.32	1561.39
115	84	31		PO	-13.48		-2.50	-8.51	-3.77	-18.87	7.29	1553.97
113	86	27		RN	2.87		-1.21	-9.44	-0.95	-20.74	8.23	1536.05
134	66	68	200	DY	113.22		-20.51	-0.63	-39.32	0.02	-9.68	1449.43
132	68	64		ER	75.77		-18.69	-1.49	-35.87	-1.68	-7.93	1485.31
131	69	62		TM	60.59		-15.88	-0.50	-34.26	-2.52	-7.16	1499.70
130	70	60		YB	43.57		-16.75	-2.33	-32.32	-3.24	-5.93	1515.95
129	71	58		LU	31.06		-14.06	-1.22	-30.49	-3.78	-4.66	1527.68
128	72	56		HF	16.86		-14.63	-2.88	-28.37	-4.50	-3.26	1541.09
127	73	54		TA	6.59		-12.38	-1.94	-26.69	-6.66	-3.73	1550.58
126	74	52		W	-5.18		-12.93	-5.04	-24.99	-9.30	-4.67	1561.57
125	75	50		RE	-11.33		-10.40	-4.58	-23.01	-10.57	-3.97	1566.94
124	76	48		OS	-18.67		-11.13	-6.31	-21.22	-11.23	-2.83	1573.49
123	77	46		IR	-21.43		-8.29	-5.23	-19.10	-12.00	-1.49	1575.47
122	78	44		PT	-26.45	0.16	-9.47	-7.08	-17.45	-12.76	-0.59	1579.71
121	79	42		AU	-27.05	0.24	-6.91	-5.99	-16.06	-13.78	-0.22	1579.53
120	80	40		HG	-29.47	0.03	-7.62	-8.11	-14.21	-14.66	0.75	1581.16
119	81	38		TL	-27.12	-0.07	-4.98	-6.87	-12.29	-15.75	1.58	1578.03
118	82	36		PB	-26.51	-0.40	-5.47	-9.20	-10.13	-16.76	2.73	1576.64
117	83	34		BI	-19.93	-0.31	-1.83	-7.88	-6.98	-17.79	4.84	1569.27
116	84	32		PO	-15.64	0.36	-2.81	-10.23	-4.33	-18.74	6.55	1564.20
115	85	30		AT	-6.49		-0.30	-8.83	-2.79	-19.43	7.40	1554.27
114	86	28		RN	0.03		-1.53	-10.92	-1.51	-20.36	7.75	1546.97
112	88	24		RA	20.05		-0.19	-11.87	1.23	-22.39	8.46	1525.39

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
134	67	67	201	HO	102.92		-17.59	-0.73	-38.10	-0.40	-9.22	1467.02
132	69	63		TM	67.07		-15.99	-1.59	-34.68	-2.09	-7.50	1501.30
131	70	61		YB	51.04		-16.85	-0.60	-32.73	-2.93	-6.39	1516.55
130	71	59		LU	36.69		-14.16	-2.44	-30.91	-3.65	-5.29	1530.11
129	72	57		HF	23.62		-14.73	-1.32	-28.79	-4.20	-3.72	1542.41
128	73	55		TA	11.67		-12.48	-2.98	-27.11	-4.92	-2.75	1553.57
127	74	53		W	0.85		-13.03	-2.04	-25.40	-7.08	-3.21	1563.61
126	75	51		RE	-8.40		-10.50	-5.14	-23.43	-9.72	-3.87	1572.07
125	76	49		OS	-15.28		-11.23	-4.68	-21.64	-10.99	-3.35	1578.17
124	77	47		IR	-19.77		-8.39	-6.41	-19.52	-11.65	-1.89	1581.88
123	78	45		PT	-23.71	-0.21	-9.57	-5.34	-17.86	-12.42	-1.01	1585.04
122	79	43		AU	-26.17	-0.01	-7.01	-7.19	-16.48	-13.18	-0.38	1586.71
121	80	41		HG	-27.49	0.17	-7.72	-6.09	-14.63	-14.20	0.45	1587.25
120	81	39		TL	-27.26	-0.01	-5.08	-8.21	-12.70	-15.07	1.50	1586.24
119	82	37		PB	-25.41	-0.13	-5.57	-6.97	-10.55	-16.17	2.56	1583.60
118	83	35		BI	-21.15	-0.07	-1.93	-9.30	-7.40	-17.18	4.70	1578.57
117	84	33		PO	-15.55	0.27	-2.91	-7.98	-4.74	-18.21	6.32	1572.18
116	85	31		AT	-8.75		-0.40	-10.33	-3.21	-19.16	6.91	1564.60
115	86	29		RN	-0.83		-1.63	-8.93	-1.93	-19.85	7.50	1555.90
113	88	25		RA	18.26		-0.29	-9.86	0.81	-21.72	8.37	1535.24
136	66	70	202	DY	129.92		-21.32	-0.53	-40.55	0.55	-10.47	1448.87
134	68	66		ER	90.70		-19.51	-1.45	-37.10	-1.22	-8.79	1486.53
133	69	64		TM	74.66		-16.70	-0.49	-35.50	-2.08	-8.05	1501.78
132	70	62		YB	56.80		-17.56	-2.31	-33.55	-2.91	-6.93	1518.86
131	71	60		LU	43.45		-14.88	-1.32	-31.72	-3.75	-5.95	1531.43
130	72	58		HF	28.54		-15.44	-3.15	-29.61	-4.47	-4.55	1545.56
129	73	56		TA	17.71		-13.19	-2.03	-27.92	-5.02	-3.41	1555.60
128	74	54		W	5.22		-13.74	-3.70	-26.22	-5.74	-2.43	1567.31
127	75	52		RE	-3.08		-11.22	-2.76	-24.25	-7.89	-2.61	1574.83
126	76	50		OS	-13.06		-11.95	-5.85	-22.45	-10.53	-3.46	1584.02
125	77	48		IR	-17.09		-9.10	-5.39	-20.34	-11.80	-2.61	1587.27
124	78	46		PT	-22.77		-10.29	-7.13	-18.68	-12.46	-1.61	1592.17
123	79	44		AU	-24.15	-0.04	-7.72	-6.05	-17.30	-13.24	-1.00	1592.76
122	80	42		HG	-27.32	0.03	-8.44	-7.90	-15.45	-13.99	0.09	1595.15
121	81	40		TL	-25.99	0.13	-5.79	-6.81	-13.52	-15.01	1.00	1593.05
120	82	38		PB	-26.26	-0.18	-6.29	-8.92	-11.36	-15.89	2.28	1592.53
119	83	36		BI	-20.76	-0.15	-2.65	-7.68	-8.22	-16.98	4.33	1586.25
118	84	34		PO	-17.49	0.09	-3.63	-10.01	-5.56	-17.99	5.97	1582.20
117	85	32		AT	-9.37	0.13	-1.11	-8.69	-4.03	-19.03	6.48	1573.30
116	86	30		RN	-3.81		-2.35	-11.05	-2.74	-19.98	6.81	1566.95
114	88	26		RA	14.60		-1.01	-11.73	-0.00	-21.59	7.94	1546.98
136	67	69	203	HO	118.87		-18.34	-0.55	-39.66	-0.19	-9.99	1467.21
134	69	65		TM	81.25		-16.73	-1.47	-36.24	-1.96	-8.34	1503.26
133	70	63		YB	64.36		-17.59	-0.51	-34.29	-2.82	-7.26	1519.38
132	71	61		LU	49.18		-14.91	-2.34	-32.47	-3.65	-6.27	1533.77
131	72	59		HF	35.26		-15.47	-1.34	-30.35	-4.50	-4.99	1546.90
130	73	57		TA	22.60		-13.22	-3.18	-28.67	-5.21	-4.03	1558.78
129	74	55		W	11.23		-13.77	-2.06	-26.96	-5.76	-2.87	1569.37
128	75	53		RE	1.26		-11.25	-3.73	-24.99	-6.48	-1.61	1578.56
127	76	51		OS	-7.77		-11.98	-2.78	-23.20	-8.64	-1.98	1586.81
126	77	49		IR	-14.90		-9.13	-5.88	-21.08	-11.28	-2.50	1593.16
125	78	47		PT	-20.12		-10.32	-5.42	-19.42	-12.55	-2.11	1597.59
124	79	45		AU	-23.23	-0.07	-7.75	-7.15	-18.04	-13.21	-1.39	1599.92
123	80	43		HG	-25.33	-0.06	-8.47	-6.08	-16.19	-13.98	-0.31	1601.23
122	81	41		TL	-25.85	-0.10	-5.82	-7.93	-14.26	-14.74	0.86	1600.98
121	82	39		PB	-25.02	-0.08	-6.31	-6.83	-12.11	-15.76	1.99	1599.36
120	83	37		BI	-21.64	0.11	-2.68	-8.95	-8.96	-16.63	4.26	1595.20
119	84	35		PO	-17.13	0.13	-3.66	-7.71	-6.30	-17.73	5.83	1589.91
118	85	33		AT	-11.35	0.09	-1.14	-10.04	-4.77	-18.74	6.35	1583.34
117	86	31		RN	-4.46		-2.37	-8.72	-3.49	-19.77	6.60	1575.67
115	88	27		RA	13.00		-1.04	-9.67	-0.75	-21.41	7.70	1556.65

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
138	66	72	204	DY	147.33		-21.68	-0.05	-41.65	1.27	-10.99	1447.61
136	68	68		ER	106.29		-19.87	-0.88	-38.21	-0.55	-9.36	1487.08
134	70	64		YB	70.62		-17.92	-1.80	-34.65	-2.32	-7.57	1521.18
133	71	62		LU	56.41		-15.24	-0.84	-32.83	-3.18	-6.61	1534.61
132	72	60		HF	40.67		-15.80	-2.67	-30.71	-4.01	-5.32	1549.57
131	73	58		TA	29.00		-13.55	-1.67	-29.03	-4.85	-4.48	1560.45
130	74	56		W	15.79		-14.10	-3.51	-27.32	-5.57	-3.50	1572.88
129	75	54		RE	6.94		-11.58	-2.39	-25.35	-6.12	-2.07	1580.95
128	76	52		OS	-3.76		-12.31	-4.06	-23.56	-6.84	-1.00	1590.86
127	77	50		IR	-9.94		-9.46	-3.11	-21.44	-9.00	-1.04	1596.27
126	78	48		PT	-18.26		-10.65	-6.21	-19.78	-11.64	-2.02	1603.80
125	79	46		AU	-20.91		-8.08	-5.75	-18.40	-12.91	-1.91	1605.67
124	80	44		HG	-24.74	-0.05	-8.80	-7.48	-16.55	-13.56	-0.71	1608.72
123	81	42		TL	-24.19	0.15	-6.15	-6.41	-14.62	-14.34	0.44	1607.39
122	82	40		PB	-25.21	-0.10	-6.64	-8.26	-12.47	-15.09	1.84	1607.62
121	83	38		BI	-20.74	-0.07	-3.01	-7.16	-9.32	-16.12	3.96	1602.37
120	84	36		PO	-18.34	-0.14	-3.99	-9.28	-6.66	-16.99	5.74	1599.19
119	85	34		AT	-11.31	-0.19	-1.47	-8.04	-5.13	-18.08	6.19	1591.38
118	86	32		RN	-6.76	0.41	-2.70	-10.37	-3.85	-19.10	6.46	1586.04
117	87	30		FR	2.76		-0.07	-9.05	-2.45	-20.13	6.82	1575.74
116	88	28		RA	9.66		-1.37	-11.41	-1.11	-21.08	7.21	1568.05
138	67	71	205	HO	135.85		-18.76	-0.15	-40.45	0.84	-10.52	1466.37
136	69	67		TM	96.42		-17.16	-0.98	-37.02	-0.98	-8.92	1504.23
135	70	65		YB	78.60		-18.02	-0.09	-35.08	-1.90	-7.89	1521.27
134	71	63		LU	62.58		-15.33	-1.90	-33.25	-2.75	-6.92	1536.51
133	72	61		HF	47.80		-15.90	-0.94	-31.14	-3.61	-5.66	1550.51
132	73	59		TA	34.31		-13.65	-2.76	-29.45	-4.44	-4.81	1563.22
131	74	57		W	22.09		-14.20	-1.77	-27.75	-5.28	-3.95	1574.65
130	75	55		RE	11.41		-11.67	-3.61	-25.78	-6.00	-2.69	1584.55
129	76	53		OS	1.83		-12.40	-2.49	-23.98	-6.55	-1.45	1593.35
128	77	51		IR	-6.03		-9.56	-4.15	-21.87	-7.27	-0.05	1600.42
127	78	49		PT	-13.40		-10.75	-3.21	-20.21	-9.42	-0.55	1607.01
126	79	47		AU	-19.15		-8.18	-6.31	-18.82	-12.06	-1.81	1611.98
125	80	45		HG	-22.52	-0.36	-8.90	-5.85	-16.98	-13.33	-1.23	1614.57
124	81	43		TL	-23.70	0.11	-6.25	-7.58	-15.05	-13.99	0.04	1614.97
123	82	41		PB	-23.64	0.13	-6.74	-6.51	-12.89	-14.77	1.42	1614.13
122	83	39		BI	-21.02	0.05	-3.10	-8.36	-9.75	-15.52	3.81	1610.72
121	84	37		PO	-17.53	-0.02	-4.08	-7.26	-7.09	-16.54	5.45	1606.45
120	85	35		AT	-12.62	0.01	-1.57	-9.38	-5.56	-17.42	6.11	1600.76
119	86	33		RN	-6.83	0.10	-2.80	-8.14	-4.27	-18.51	6.30	1594.18
118	87	31		FR	0.36		-0.17	-10.47	-2.87	-19.52	6.69	1586.21
117	88	29		RA	8.59		-1.46	-9.15	-1.53	-20.56	6.99	1577.20
138	68	70	206	ER	122.63		-20.51	-0.69	-39.27	0.20	-9.71	1486.88
136	70	66		YB	85.15		-18.56	-1.52	-35.72	-1.62	-7.97	1522.80
135	71	64		LU	70.02		-15.88	-0.64	-33.89	-2.54	-7.07	1537.15
134	72	62		HF	53.42		-16.44	-2.44	-31.78	-3.39	-5.80	1552.96
133	73	60		TA	40.89		-14.19	-1.48	-30.09	-4.25	-4.98	1564.70
132	74	58		W	26.86		-14.74	-3.31	-28.39	-5.08	-4.11	1577.96
131	75	56		RE	17.16		-12.22	-2.31	-26.42	-5.92	-2.97	1586.87
130	76	54		OS	5.75		-12.95	-4.15	-24.62	-6.64	-1.90	1597.50
129	77	52		IR	-0.99		-10.10	-3.03	-22.51	-7.19	-0.33	1603.46
128	78	50		PT	-10.03		-11.29	-4.70	-20.85	-7.91	0.61	1611.71
127	79	48		AU	-14.83		-8.72	-3.75	-19.46	-10.06	-0.17	1615.73
126	80	46		HG	-21.30	-0.35	-9.44	-6.85	-17.62	-12.70	-0.95	1621.42
125	81	44		TL	-22.02	0.24	-6.79	-6.39	-15.69	-13.97	-0.30	1621.36
124	82	42		PB	-23.70	0.09	-7.28	-8.12	-13.53	-14.63	1.20	1622.25
123	83	40		BI	-20.00	0.13	-3.65	-7.05	-10.39	-15.41	3.57	1617.77
122	84	38		PO	-18.36	-0.03	-4.63	-8.90	-7.73	-16.16	5.47	1615.35
121	85	36		AT	-12.35	-0.05	-2.11	-7.80	-6.20	-17.18	5.99	1608.56
120	86	34		RN	-8.68	0.09	-3.34	-9.92	-4.91	-18.06	6.39	1604.10
119	87	32		FR	-0.25	-0.10	-0.71	-8.68	-3.51	-19.15	6.70	1594.89
118	88	30		RA	5.64		-2.01	-11.01	-2.17	-20.16	7.03	1588.22
116	90	26		TH	25.42		-0.10	-12.05	1.17	-22.14	8.39	1566.88

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
138	69	69	207	TM	112.08		-17.84	-0.83	-38.35	-0.48	-9.21	1504.72
136	71	65		LU	76.42		-16.01	-1.66	-34.58	-2.30	-7.26	1538.81
135	72	63		HF	60.72		-16.58	-0.77	-32.46	-3.22	-6.06	1553.73
134	73	61		TA	46.38		-14.33	-2.58	-30.77	-4.07	-5.22	1567.29
133	74	59		W	33.30		-14.88	-1.62	-29.07	-4.93	-4.38	1579.58
132	75	57		RE	21.79		-12.36	-3.45	-27.10	-5.76	-3.24	1590.32
131	76	55		OS	11.37		-13.09	-2.45	-25.30	-6.60	-2.29	1599.96
130	77	53		IR	2.80		-10.24	-4.29	-23.19	-7.32	-0.89	1607.74
129	78	51		PT	-5.13		-11.43	-3.17	-21.53	-7.87	0.22	1614.88
128	79	49		AU	-11.59		-8.86	-4.84	-20.15	-8.59	0.88	1620.57
127	80	47		HG	-17.12		-9.58	-3.89	-18.30	-10.74	0.58	1625.31
126	81	45		TL	-20.94	0.06	-6.93	-6.99	-16.37	-13.38	-0.14	1628.35
125	82	43		PB	-22.16	0.29	-7.42	-6.53	-14.22	-14.66	0.75	1628.78
124	83	41		BI	-20.19	-0.11	-3.79	-8.26	-11.07	-15.31	3.24	1626.04
123	84	39		PO	-17.48	-0.30	-4.77	-7.19	-8.41	-16.09	5.12	1622.54
122	85	37		AT	-13.32	0.13	-2.25	-9.04	-6.88	-16.84	5.90	1617.60
121	86	35		RN	-8.55	0.06	-3.48	-7.94	-5.59	-17.86	6.16	1612.05
120	87	33		FR	-2.24	-0.13	-0.85	-10.06	-4.19	-18.74	6.68	1604.95
119	88	31		RA	4.90		-2.14	-8.82	-2.85	-19.83	6.93	1597.04
117	90	27		TH	23.66		-0.24	-9.83	0.49	-21.88	8.23	1576.71
140	68	72	208	ER	139.77		-20.72	-0.01	-40.17	0.99	-9.98	1485.88
138	70	68		YB	100.60		-18.77	-0.90	-36.61	-0.69	-8.12	1523.49
136	72	64		HF	67.06		-16.66	-1.74	-32.67	-2.51	-5.99	1555.47
135	73	62		TA	53.61		-14.40	-0.85	-30.99	-3.43	-5.23	1568.13
134	74	60		W	38.72		-14.95	-2.66	-29.28	-4.28	-4.37	1582.24
133	75	58		RE	28.16		-12.43	-1.70	-27.31	-5.14	-3.26	1592.01
132	76	56		OS	15.92		-13.16	-3.52	-25.52	-5.97	-2.30	1603.48
131	77	54		IR	8.34		-10.32	-2.53	-23.40	-6.81	-1.03	1610.27
130	78	52		PT	-1.42		-11.50	-4.36	-21.74	-7.53	-0.09	1619.24
129	79	50		AU	-6.77		-8.93	-3.25	-20.36	-8.08	0.75	1623.81
128	80	48		HG	-13.96		-9.65	-4.91	-18.51	-8.80	1.88	1630.22
127	81	46		TL	-16.84	-0.08	-7.01	-3.97	-16.58	-10.96	1.65	1632.32
126	82	44		PB	-21.15	0.60	-7.50	-7.06	-14.43	-13.60	1.17	1635.85
125	83	42		BI	-18.73	0.15	-3.86	-6.61	-11.28	-14.87	3.04	1632.64
124	84	40		PO	-17.74	-0.27	-4.84	-8.34	-8.62	-15.52	5.04	1630.88
123	85	38		AT	-12.51	-0.04	-2.32	-7.26	-7.09	-16.30	5.80	1624.86
122	86	36		RN	-9.59	-0.08	-3.56	-9.11	-5.81	-17.06	6.33	1621.16
121	87	34		FR	-2.18	-0.27	-0.92	-8.02	-4.41	-18.08	6.71	1612.97
120	88	32		RA	2.83		-2.22	-10.13	-3.07	-18.95	7.17	1607.17
118	90	28		TH	20.50		-0.31	-11.23	0.28	-21.06	8.41	1587.94
140	69	71	209	TM	128.90		-18.15	-0.25	-38.87	0.68	-9.37	1504.04
138	71	67		LU	91.56		-16.33	-1.15	-35.10	-1.01	-7.29	1539.82
137	72	65		HF	75.02		-16.90	-0.11	-32.99	-1.84	-6.00	1555.57
136	73	63		TA	59.70		-14.65	-1.98	-31.30	-2.83	-5.30	1570.11
135	74	61		W	45.70		-15.20	-1.09	-29.60	-3.75	-4.52	1583.33
134	75	59		RE	33.34		-12.67	-2.90	-27.63	-4.60	-3.40	1594.91
133	76	57		OS	22.05		-13.40	-1.94	-25.83	-5.46	-2.47	1605.41
132	77	55		IR	12.65		-10.56	-3.76	-23.72	-6.29	-1.18	1614.03
131	78	53		PT	3.89		-11.74	-2.77	-22.06	-7.13	-0.36	1622.01
130	79	51		AU	-3.30		-9.17	-4.60	-20.67	-7.85	0.30	1628.42
129	80	49		HG	-9.37		-9.89	-3.49	-18.83	-8.40	1.60	1633.71
128	81	47		TL	-13.92	-0.22	-7.25	-5.15	-16.90	-9.12	2.81	1637.47
127	82	45		PB	-17.29	0.34	-7.74	-4.21	-14.74	-11.27	2.81	1640.06
126	83	43		BI	-17.96	0.30	-4.10	-7.31	-11.60	-13.91	3.31	1639.95
125	84	41		PO	-16.52	-0.15	-5.08	-6.85	-8.94	-15.18	4.70	1637.72
124	85	39		AT	-13.02	-0.13	-2.57	-8.58	-7.41	-15.84	5.58	1633.44
123	86	37		RN	-9.02	-0.09	-3.80	-7.50	-6.12	-16.62	6.08	1628.66
122	87	35		FR	-3.46	-0.03	-1.17	-9.35	-4.72	-17.37	6.73	1622.32
121	88	33		RA	2.65		-2.46	-8.26	-3.38	-18.39	7.05	1615.43
119	90	29		TH	19.44		-0.55	-9.14	-0.04	-20.36	8.43	1597.07
140	70	70	210	YB	116.90		-19.30	-0.54	-37.45	0.15	-8.16	1523.34
138	72	66		HF	81.67		-17.18	-1.43	-33.51	-1.53	-5.91	1557.00
137	73	64		TA	67.38		-14.93	-0.39	-31.83	-2.37	-5.06	1570.50
136	74	62		W	51.51		-15.48	-2.26	-30.12	-3.35	-4.34	1585.59
135	75	60		RE	40.04		-12.95	-1.37	-28.15	-4.27	-3.28	1596.28
134	76	58		OS	26.94		-13.68	-3.18	-26.36	-5.12	-2.34	1608.60
133	77	56		IR	18.50		-10.84	-2.22	-24.24	-5.98	-1.09	1616.25
132	78	54		PT	7.91		-12.02	-4.04	-22.58	-6.81	-0.26	1626.06
131	79	52		AU	1.72		-9.46	-3.05	-21.20	-7.65	0.28	1631.47
130	80	50		HG	-6.19		-10.17	-4.89	-19.35	-8.37	1.41	1638.59
129	81	48		TL	-9.61	-0.35	-7.53	-3.77	-17.42	-8.92	2.79	1641.24
128	82	46		PB	-14.65	0.08	-8.02	-5.43	-15.27	-9.64	4.23	1645.49
127	83	44		BI	-14.38	0.41	-4.38	-4.49	-12.12	-11.80	5.22	1644.44
126	84	42		PO	-16.03	-0.08	-5.36	-7.59	-9.46	-14.44	5.24	1645.31
125	85	40		AT	-12.08	-0.00	-2.85	-7.13	-7.93	-15.71	5.50	1640.57
124	86	38		RN	-9.81	-0.07	-4.08	-8.86	-6.65	-16.36	6.12	1637.52
123	87	36		FR	-3.18	0.02	-1.45	-7.79	-5.25	-17.14	6.75	1630.11
122	88	34		RA	1.08		-2.74	-9.64	-3.91	-17.90	7.33	1625.06
121	89	32		AC	9.93		-0.01	-8.54	-2.47	-18.92	7.75	1615.43
	90	30		TH	16.85		-0.84	-10.66	-0.56	-19.79	8.78	1607.73

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
140	71	69	211	LU	107.42		-16.76	-0.69	-36.06	-0.28	-7.09	1540.10
138	73	65		TA	73.88		-15.08	-1.58	-32.26	-1.97	-4.97	1572.08
137	74	63		W	59.04		-15.63	-0.54	-30.56	-2.80	-4.10	1586.13
136	75	61		RE	45.70		-13.11	-2.41	-28.58	-3.78	-3.11	1598.69
135	76	59		OS	33.49		-13.83	-1.52	-26.79	-4.70	-2.24	1610.12
134	77	57		IR	23.24		-10.99	-3.33	-24.67	-5.55	-0.97	1619.59
133	78	55		PT	13.61		-12.18	-2.37	-23.01	-6.42	-0.18	1628.43
132	79	53		AU	5.60		-9.61	-4.20	-21.63	-7.25	0.38	1635.66
131	80	51		HG	-1.32		-10.33	-3.20	-19.78	-8.09	1.38	1641.80
130	81	49		TL	-6.58		-7.68	-5.04	-17.86	-8.81	2.59	1646.27
129	82	47		PB	-10.50	-0.01	-8.17	-3.92	-15.70	-9.35	4.20	1649.41
128	83	45		BI	-11.89	-0.06	-4.53	-5.58	-12.55	-10.07	6.62	1650.02
127	84	43		PO	-12.60	-0.18	-5.51	-4.64	-9.90	-12.23	7.13	1649.95
126	85	41		AT	-11.75	-0.07	-3.00	-7.74	-8.36	-14.87	6.02	1648.31
125	86	39		RN	-9.02	-0.23	-4.23	-7.28	-7.08	-16.14	6.03	1644.80
124	87	37		FR	-4.12	0.23	-1.60	-9.01	-5.68	-16.80	6.78	1639.12
123	88	35		RA	1.22	0.33	-2.89	-7.94	-4.34	-17.57	7.34	1633.00
122	89	33		AC	8.22		-0.16	-9.79	-2.90	-18.33	8.03	1625.22
121	90	31		TH	16.23		-0.99	-8.69	-0.99	-19.35	8.91	1616.42
140	72	68	212	HF	97.17		-17.54	-0.90	-34.31	-0.64	-5.86	1557.64
138	74	64		W	65.32		-15.84	-1.79	-30.92	-2.33	-4.16	1587.92
137	75	62		RE	53.01		-13.32	-0.75	-28.95	-3.16	-3.02	1599.45
136	76	60		OS	38.94		-14.05	-2.63	-27.15	-4.15	-2.21	1612.74
135	77	58		IR	29.57		-11.20	-1.74	-25.04	-5.07	-1.01	1621.32
134	78	56		PT	18.14		-12.39	-3.55	-23.38	-5.92	-0.20	1631.97
133	79	54		AU	11.08		-9.82	-2.59	-22.00	-6.78	0.32	1638.25
132	80	52		HG	2.35		-10.54	-4.41	-20.15	-7.61	1.34	1646.20
131	81	50		TL	-1.92		-7.89	-3.42	-18.22	-8.45	2.42	1649.69
130	82	48		PB	-7.68	-0.13	-8.39	-5.25	-16.07	-9.17	3.86	1654.66
129	83	46		BI	-7.95	0.17	-4.75	-4.13	-12.92	-9.72	6.46	1654.16
128	84	44		PO	-10.33	0.04	-5.73	-5.80	-10.26	-10.44	8.39	1655.75
127	85	42		AT	-8.53	0.11	-3.21	-4.85	-8.73	-12.59	7.77	1653.17
126	86	40		RN	-8.90	-0.25	-4.45	-7.95	-7.44	-15.23	6.41	1652.76
125	87	38		FR	-3.54	-0.03	-1.81	-7.49	-6.04	-16.51	6.54	1646.61
124	88	36		RA	0.06	0.10	-3.11	-9.23	-4.70	-17.16	7.23	1642.23
123	89	34		AC	8.14		-0.37	-8.15	-3.26	-17.94	7.89	1633.37
122	90	32		TH	14.30		-1.20	-10.00	-1.36	-18.69	9.04	1626.42
142	71	71	213	LU	124.16		-17.20	-0.17	-36.87	0.59	-7.17	1539.50
140	73	67		TA	88.93		-15.52	-1.13	-33.07	-1.09	-5.05	1573.16
139	74	65		W	73.21		-16.07	-0.19	-31.36	-1.98	-4.24	1588.11
138	75	63		RE	59.06		-13.55	-2.02	-29.39	-2.77	-3.06	1601.47
137	76	61		OS	46.03		-14.28	-0.98	-27.60	-3.61	-2.10	1613.72
136	77	59		IR	34.79		-11.43	-2.85	-25.48	-4.59	-0.97	1624.18
135	78	57		PT	24.25		-12.62	-1.96	-23.82	-5.51	-0.23	1633.94
134	79	55		AU	15.38		-10.05	-3.77	-22.44	-6.36	0.30	1642.02
133	80	53		HG	7.60		-10.77	-2.81	-20.59	-7.22	1.29	1649.02
132	81	51		TL	1.51		-8.12	-4.64	-18.66	-8.05	2.39	1654.33
131	82	49		PB	-3.25	0.20	-8.61	-3.64	-16.51	-8.89	3.70	1658.30
130	83	47		BI	-5.36	-0.07	-4.98	-5.48	-13.36	-9.61	6.13	1659.64
129	84	45		PO	-6.62	0.06	-5.96	-4.36	-10.70	-10.16	8.24	1660.11
128	85	43		AT	-6.48	-0.02	-3.44	-6.03	-9.17	-10.88	9.05	1659.19
127	86	41		RN	-5.91	-0.26	-4.67	-5.08	-7.89	-13.04	8.18	1657.84
126	87	39		FR	-3.65	-0.10	-2.04	-8.18	-6.49	-15.68	6.94	1654.80
125	88	37		RA	0.41	0.02	-3.34	-7.72	-5.15	-16.95	7.01	1649.95
124	89	35		AC	6.75	0.18	-0.60	-9.45	-3.71	-17.60	7.79	1642.83
123	90	33		TH	14.00		-1.43	-8.38	-1.80	-18.38	8.92	1634.80
142	72	70	214	HF	113.27		-18.18	-0.58	-35.39	-0.04	-6.05	1557.68
140	74	66		W	79.74		-16.48	-1.54	-32.00	-1.72	-4.35	1589.64
139	75	64		RE	66.54		-13.95	-0.59	-30.03	-2.61	-3.27	1602.06
138	76	62		OS	51.67		-14.68	-2.43	-28.23	-3.41	-2.27	1616.15
137	77	60		IR	41.48		-11.84	-1.39	-26.12	-4.24	-0.98	1625.56
136	78	58		PT	29.06		-13.03	-3.26	-24.46	-5.23	-0.31	1637.20
135	79	56		AU	21.08		-10.46	-2.37	-23.07	-6.15	0.15	1644.40
134	80	54		HG	11.49		-11.18	-4.18	-21.23	-7.00	1.15	1653.20
133	81	52		TL	6.36		-8.53	-3.22	-19.30	-7.86	2.22	1657.55
132	82	50		PB	-0.22	-0.00	-9.02	-5.04	-17.14	-8.69	3.54	1663.35
131	83	48		BI	-1.34	-0.12	-5.38	-4.05	-14.00	-9.53	5.85	1663.69
130	84	46		PO	-4.44	0.03	-6.36	-5.89	-11.34	-10.25	7.78	1666.00
129	85	44		AT	-3.18	0.23	-3.85	-4.77	-9.81	-10.80	8.77	1663.96
128	86	42		RN	-4.28	0.03	-5.08	-6.43	-8.52	-11.52	9.33	1664.27
127	87	40		FR	-1.07	-0.14	-2.45	-5.49	-7.12	-13.67	8.58	1660.29
126	88	38		RA	-0.11	-0.10	-3.74	-8.59	-5.78	-16.31	7.28	1658.54
125	89	36		AC	6.69	0.08	-1.01	-8.13	-4.34	-17.58	7.45	1650.96
124	90	34		TH	12.21		-1.84	-9.86	-2.44	-18.24	8.70	1644.66
122	92	30		U	29.43		-0.40	-10.64	0.55	-19.77	10.16	1625.87

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
142	73	69	215	TA	104.50		-16.06	-0.70	-34.24	-0.58	-5.35	1573.74
140	75	65		RE	72.95		-14.08	-1.66	-30.56	-2.26	-3.35	1603.72
139	76	63		OS	59.02		-14.81	-0.72	-28.77	-3.15	-2.45	1616.87
138	77	61		IR	46.99		-11.97	-2.56	-26.65	-3.94	-1.13	1628.12
137	78	59		PT	35.61		-13.15	-1.51	-24.99	-4.78	-0.30	1638.72
136	79	57		AU	25.76		-10.58	-3.39	-23.61	-5.76	0.10	1647.79
135	80	55		HG	17.06		-11.30	-2.50	-21.76	-6.68	1.03	1655.70
134	81	53		TL	10.12		-8.66	-4.31	-19.83	-7.53	2.10	1661.86
133	82	51		PB	4.50		-9.15	-3.35	-17.68	-8.39	3.39	1666.70
132	83	49		BI	1.56	-0.14	-5.51	-5.17	-14.53	-9.22	5.71	1668.86
131	84	47		PO	-0.54	-0.01	-6.49	-4.18	-11.87	-10.06	7.53	1670.18
130	85	45		AT	-1.12	0.12	-3.98	-6.01	-10.34	-10.78	8.34	1669.98
129	86	43		RN	-1.10	0.12	-5.21	-4.90	-9.06	-11.33	9.08	1669.17
128	87	41		FR	0.44	0.11	-2.57	-6.56	-7.66	-12.05	9.76	1666.85
127	88	39		RA	2.35	-0.18	-3.87	-5.62	-6.32	-14.21	8.94	1664.16
126	89	37		AC	6.05		-1.13	-8.72	-4.88	-16.85	7.74	1659.67
125	90	35		TH	12.02		-1.96	-8.26	-2.97	-18.12	8.38	1652.92
123	92	31		U	28.59		-0.53	-8.91	0.02	-19.55	9.93	1634.78
144	72	72	216	HF	129.88		-18.86	-0.43	-36.60	0.47	-6.62	1557.21
142	74	68		W	94.63		-17.15	-1.25	-33.21	-1.25	-4.96	1590.90
141	75	66		RE	80.47		-14.63	-0.55	-31.24	-2.21	-3.94	1604.27
140	76	64		OS	64.88		-15.36	-2.21	-29.44	-2.93	-2.87	1619.09
139	77	62		IR	53.79		-12.52	-1.27	-27.33	-3.83	-1.65	1629.39
138	78	60		PT	40.58		-13.70	-3.11	-25.67	-4.62	-0.78	1641.82
137	79	58		AU	31.77		-11.13	-2.06	-24.29	-5.45	-0.23	1649.85
136	80	56		HG	21.20		-11.85	-3.94	-22.44	-6.44	0.63	1659.64
135	81	54		TL	15.15		-9.21	-3.05	-20.51	-7.36	1.64	1664.91
134	82	52		PB	7.71		-9.70	-4.86	-18.36	-8.21	2.94	1671.56
133	83	50		BI	5.73	-0.17	-6.06	-3.90	-15.21	-9.07	5.23	1672.76
132	84	48		PO	1.81	0.02	-7.04	-5.72	-12.55	-9.90	7.06	1675.90
131	85	46		AT	2.22	-0.03	-4.53	-4.73	-11.02	-10.74	7.75	1674.70
130	86	44		RN	0.41	0.15	-5.76	-6.56	-9.73	-11.46	8.31	1675.73
129	87	42		FR	3.06	-0.02	-3.12	-5.45	-8.33	-12.01	9.17	1672.29
128	88	40		RA	3.31	0.06	-4.42	-7.11	-6.99	-12.73	9.79	1671.27
127	89	38		AC	7.95		-1.68	-6.17	-5.55	-14.88	9.07	1665.84
126	90	36		TH	10.83		-2.51	-9.27	-3.65	-17.52	8.34	1662.19
125	91	34		PA	19.18		-0.13	-8.81	-2.10	-18.80	8.62	1653.05
124	92	32		U	26.13		-1.08	-10.54	-0.66	-19.45	9.40	1645.32
144	73	71	217	TA	120.40		-16.77	-0.59	-35.63	-0.24	-6.18	1573.98
142	75	67		RE	87.13		-14.79	-1.42	-31.95	-1.97	-4.23	1605.69
141	76	65		OS	72.24		-15.52	-0.71	-30.16	-2.92	-3.39	1619.80
140	77	63		IR	59.49		-12.68	-2.38	-28.04	-3.64	-2.00	1631.76
139	78	61		PT	47.22		-13.86	-1.43	-26.38	-4.54	-1.23	1643.25
138	79	59		AU	36.57		-11.30	-3.27	-25.00	-5.33	-0.65	1653.12
137	80	57		HG	27.04		-12.02	-2.23	-23.15	-6.17	0.37	1661.86
136	81	55		TL	19.12		-9.37	-4.10	-21.22	-7.15	1.31	1669.01
135	82	53		PB	12.57		-9.86	-3.21	-19.07	-8.07	2.55	1674.77
134	83	51		BI	8.78		-6.22	-5.02	-15.92	-8.92	4.85	1677.78
133	84	49		PO	5.82	0.18	-7.20	-4.06	-13.26	-9.78	6.64	1679.96
132	85	47		AT	4.41	0.08	-4.69	-5.88	-11.73	-10.61	7.34	1680.59
131	86	45		RN	3.59	-0.04	-5.92	-4.89	-10.45	-11.45	7.78	1680.62
130	87	43		FR	4.41	-0.02	-3.29	-6.73	-9.05	-12.17	8.47	1679.02
129	88	41		RA	5.77	-0.18	-4.58	-5.61	-7.71	-12.72	9.26	1676.88
128	89	39		AC	8.75		-1.85	-7.27	-6.26	-13.44	9.98	1673.11
127	90	37		TH	12.57		-2.68	-6.33	-4.36	-15.60	9.73	1668.52
126	91	35		PA	17.82		-0.29	-9.43	-2.81	-18.24	8.64	1662.48
125	92	33		U	25.23		-1.24	-8.97	-1.37	-19.51	8.81	1654.29
146	72	74	218	HF	146.77		-19.52	-0.22	-37.97	0.74	-7.56	1556.47
144	74	70		W	109.88		-17.82	-1.09	-34.59	-0.90	-5.82	1591.80
143	75	68		RE	94.89		-15.29	-0.31	-32.61	-1.73	-4.67	1606.00
142	76	66		OS	78.39		-16.02	-1.92	-30.82	-2.63	-3.77	1621.71
141	77	64		IR	66.35		-13.18	-1.21	-28.70	-3.59	-2.62	1632.98
140	78	62		PT	52.41		-14.36	-2.88	-27.04	-4.31	-1.68	1646.13
139	79	60		AU	42.71		-11.80	-1.93	-25.66	-5.20	-1.19	1655.05
138	80	58		HG	31.35		-12.51	-3.77	-23.81	-6.00	-0.14	1665.63
137	81	56		TL	24.46		-9.87	-2.73	-21.88	-6.83	0.96	1671.73
136	82	54		PB	16.05		-10.36	-4.60	-19.73	-7.81	2.13	1679.37
135	83	52		BI	13.14		-6.72	-3.71	-16.58	-8.73	4.36	1681.49
134	84	50		PO	8.37	0.05	-7.70	-5.52	-13.93	-9.58	6.16	1685.48
133	85	48		AT	7.92	-0.10	-5.19	-4.56	-12.39	-10.44	6.83	1685.15
132	86	46		RN	5.27	0.06	-6.42	-6.38	-11.11	-11.27	7.29	1687.01
131	87	44		FR	7.09	0.07	-3.79	-5.39	-9.71	-12.12	7.85	1684.41
130	88	42		RA	6.62	-0.06	-5.08	-7.23	-8.37	-12.84	8.47	1684.10
129	89	40		AC	10.71		-2.35	-6.11	-6.93	-13.38	9.36	1679.22
128	90	38		TH	12.87		-3.18	-7.77	-5.02	-14.10	10.55	1676.29
127	91	36		PA	19.06		-0.79	-6.83	-3.47	-16.26	9.94	1669.31
126	92	34		U	23.37		-1.74	-9.93	-2.03	-18.90	8.74	1664.22
124	94	30		PU	41.77		-0.08	-11.20	1.07	-20.83	9.91	1644.25

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
146	73	73	219	TA	136.79		-17.26	-0.22	-36.78	0.24	-7.08	1573.74
144	75	69		RE	101.87		-15.29	-1.09	-33.11	-1.40	-5.05	1607.09
143	76	67		OS	86.16		-16.02	-0.30	-31.31	-2.22	-4.08	1622.02
142	77	65		IR	72.51		-13.17	-1.91	-29.20	-3.12	-2.87	1634.89
141	78	63		PT	59.28		-14.36	-1.21	-27.54	-4.08	-2.17	1647.34
140	79	61		AU	47.91		-11.79	-2.87	-26.16	-4.80	-1.50	1657.92
139	80	59		HG	37.49		-12.51	-1.93	-24.31	-5.70	-0.55	1667.56
138	81	57		TL	28.77		-9.87	-3.76	-22.38	-6.49	0.58	1675.50
137	82	55		PB	21.39		-10.36	-2.72	-20.23	-7.32	1.90	1682.09
136	83	53		BI	16.62		-6.72	-4.60	-17.08	-8.31	4.07	1686.09
135	84	51		PO	12.73		-7.70	-3.71	-14.42	-9.23	5.80	1689.19
134	85	49		AT	10.47	-0.05	-5.18	-5.52	-12.89	-10.08	6.49	1690.67
133	86	47		RN	8.79	-0.04	-6.42	-4.56	-11.60	-10.94	6.91	1691.57
132	87	45		FR	8.78	0.16	-3.78	-6.38	-10.20	-11.77	7.48	1690.79
131	88	43		RA	9.30	-0.06	-5.08	-5.39	-8.86	-12.61	7.98	1689.49
130	89	41		AC	11.56		-2.34	-7.22	-7.42	-13.33	8.70	1686.44
129	90	39		TH	14.83		-3.17	-6.11	-5.52	-13.88	10.06	1682.39
128	91	37		PA	19.36		-0.79	-7.77	-3.97	-14.60	10.89	1677.08
127	92	35		U	24.62		-1.73	-6.83	-2.53	-16.75	10.17	1671.04
125	94	31		PU	40.38		-0.08	-9.47	0.57	-20.67	9.36	1653.72
148	72	76	220	HF	163.94		-20.20	-0.16	-39.15	1.03	-8.65	1555.44
146	74	72		W	125.58		-18.50	-0.91	-35.77	-0.44	-6.73	1592.24
145	75	70		RE	109.73		-15.98	-0.22	-33.79	-1.31	-5.62	1607.31
144	76	68		OS	92.46		-16.71	-1.78	-32.00	-2.08	-4.60	1623.80
143	77	66		IR	79.59		-13.86	-0.99	-29.88	-2.91	-3.31	1635.88
142	78	64		PT	64.75		-15.05	-2.60	-28.22	-3.81	-2.56	1649.94
141	79	62		AU	54.09		-12.48	-1.90	-26.84	-4.77	-2.13	1659.82
140	80	60		HG	42.00		-13.20	-3.56	-24.99	-5.49	-1.00	1671.12
139	81	58		TL	34.22		-10.55	-2.62	-23.06	-6.38	0.03	1678.11
138	82	56		PB	25.01		-11.04	-4.45	-20.91	-7.18	1.39	1686.54
137	83	54		BI	21.28		-7.41	-3.41	-17.76	-8.01	3.71	1689.50
136	84	52		PO	15.52		-8.39	-5.29	-15.11	-8.99	5.38	1694.47
135	85	50		AT	14.15	-0.17	-5.87	-4.40	-13.57	-9.91	5.99	1695.06
134	86	48		RN	10.66	0.04	-7.11	-6.21	-12.29	-10.76	6.43	1697.77
133	87	46		FR	11.61	0.12	-4.47	-5.24	-10.89	-11.62	6.96	1696.04
132	88	44		RA	10.30	0.03	-5.77	-7.07	-9.55	-12.45	7.47	1696.56
131	89	42		AC	13.56		-3.03	-6.07	-8.11	-13.30	8.07	1692.52
130	90	40		TH	14.99		-3.86	-7.91	-6.20	-14.02	9.26	1690.30
129	91	38		PA	20.64		-1.48	-6.79	-4.65	-14.56	10.26	1683.87
128	92	36		U	24.23		-2.42	-8.46	-3.21	-15.28	10.98	1679.50
127	93	34		NP	31.87		-0.04	-7.51	-1.77	-17.44	10.27	1671.08
126	94	32		PU	37.84		-0.76	-10.61	-0.11	-20.08	9.28	1664.33
148	73	75	221	TA	153.14		-18.09	-0.30	-38.29	0.20	-8.29	1573.53
146	75	71		RE	116.75		-16.11	-1.04	-34.62	-1.26	-6.08	1608.35
145	76	69		OS	100.17		-16.84	-0.36	-32.82	-2.13	-5.15	1624.15
144	77	67		IR	85.74		-14.00	-1.91	-30.71	-2.91	-3.81	1637.80
143	78	65		PT	71.69		-15.19	-1.13	-29.05	-3.73	-2.97	1651.07
142	79	63		AU	59.42		-12.62	-2.74	-27.67	-4.63	-2.49	1662.55
141	80	61		HG	48.04		-13.34	-2.03	-25.82	-5.59	-1.60	1673.15
140	81	59		TL	38.60		-10.69	-3.70	-23.89	-6.31	-0.40	1681.81
139	82	57		PB	30.33		-11.18	-2.75	-21.74	-7.21	0.86	1689.30
138	83	55		BI	24.76		-7.54	-4.59	-18.59	-8.00	3.22	1694.09
137	84	53		PO	20.04		-8.52	-3.55	-15.93	-8.83	5.04	1698.02
136	85	51		AT	16.80		-6.01	-5.42	-14.40	-9.82	5.59	1700.48
135	86	49		RN	14.20	0.01	-7.24	-4.53	-13.11	-10.74	5.95	1702.30
134	87	47		FR	13.34	0.13	-4.61	-6.34	-11.71	-11.59	6.51	1702.38
133	88	45		RA	12.99	0.05	-5.90	-5.38	-10.37	-12.45	6.98	1701.94
132	89	43		AC	14.43	-0.17	-3.17	-7.20	-8.93	-13.28	7.59	1699.72
131	90	41		TH	16.85		-4.00	-6.21	-7.03	-14.12	8.66	1696.52
130	91	39		PA	20.67		-1.62	-8.05	-5.48	-14.84	9.49	1691.92
129	92	37		U	25.37		-2.56	-6.93	-4.04	-15.39	10.38	1686.43
128	93	35		NP	31.34		-0.17	-8.59	-2.60	-16.11	11.10	1679.68
127	94	33		PU	38.26		-0.90	-7.65	-0.94	-18.26	10.60	1671.98

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
150	72	78	222	HF	181.07		-20.83	-0.14	-40.60	0.99	-9.87	1554.46
148	74	74		W	141.30		-19.12	-0.78	-37.21	-0.42	-7.89	1592.66
147	75	72		RE	124.70		-16.60	-0.12	-35.24	-1.17	-6.66	1608.47
146	76	70		OS	106.71		-17.33	-1.53	-33.44	-1.89	-5.59	1625.68
145	77	68		IR	92.97		-14.49	-0.84	-31.33	-2.76	-4.34	1638.64
144	78	66		PT	77.36		-15.67	-2.40	-29.67	-3.53	-3.46	1653.47
143	79	64		AU	65.88		-13.10	-1.61	-28.29	-4.35	-2.90	1664.17
142	80	62		HG	52.89		-13.82	-3.22	-26.44	-5.25	-1.95	1676.37
141	81	60		TL	44.15		-11.18	-2.52	-24.51	-6.21	-0.98	1684.33
140	82	58		PB	34.22		-11.67	-4.18	-22.36	-6.93	0.45	1693.48
139	83	56		BI	29.59		-8.03	-3.24	-19.21	-7.83	2.71	1697.32
138	84	54		PO	23.04		-9.01	-5.07	-16.55	-8.62	4.57	1703.10
137	85	52		AT	20.84		-6.49	-4.03	-15.02	-9.45	5.27	1704.52
136	86	50		RN	16.36	0.03	-7.73	-5.91	-13.74	-10.44	5.57	1708.21
135	87	48		FR	16.39	-0.03	-5.09	-5.02	-12.33	-11.36	6.05	1707.40
134	88	46		RA	14.24	-0.08	-6.39	-6.83	-11.00	-12.21	6.54	1708.77
133	89	44		AC	16.63	0.09	-3.65	-5.87	-9.55	-13.07	7.12	1705.59
132	90	42		TH	17.23		-4.48	-7.69	-7.65	-13.90	8.19	1704.21
131	91	40		PA	22.04		-2.10	-6.70	-6.10	-14.74	8.90	1698.62
130	92	38		U	24.91		-3.04	-8.53	-4.66	-15.46	9.62	1694.96
129	93	36		NP	32.00		-0.66	-7.42	-3.22	-16.01	10.51	1687.09
128	94	34		PU	37.25		-1.39	-9.08	-1.56	-16.73	11.45	1681.06
150	73	77	223	TA	169.73		-18.63	-0.19	-39.45	0.45	-9.55	1573.08
148	75	73		RE	131.94		-16.65	-0.84	-35.78	-0.96	-7.28	1609.31
147	76	71		OS	114.61		-17.38	-0.17	-33.98	-1.70	-6.23	1625.86
146	77	69		IR	99.46		-14.54	-1.58	-31.87	-2.42	-4.84	1640.22
145	78	67		PT	84.54		-15.72	-0.90	-30.21	-3.29	-4.05	1654.36
144	79	65		AU	71.50		-13.16	-2.45	-28.83	-4.07	-3.44	1666.62
143	80	63		HG	59.29		-13.87	-1.67	-26.98	-4.89	-2.41	1678.04
142	81	61		TL	48.95		-11.23	-3.28	-25.05	-5.79	-1.39	1687.60
141	82	59		PB	39.72		-11.72	-2.57	-22.90	-6.75	-0.19	1696.05
140	83	57		BI	33.43		-8.08	-4.23	-19.75	-7.47	2.24	1701.56
139	84	55		PO	27.82		-9.06	-3.29	-17.09	-8.37	4.00	1706.39
138	85	53		AT	23.78		-6.55	-5.13	-15.56	-9.16	4.74	1709.64
137	86	51		RN	20.35		-7.78	-4.09	-14.27	-9.99	5.19	1712.30
136	87	49		FR	18.50	0.12	-5.15	-5.96	-12.87	-10.98	5.61	1713.36
135	88	47		RA	17.24	0.01	-6.44	-5.07	-11.53	-11.90	6.03	1713.84
134	89	45		AC	17.82	-0.01	-3.70	-6.88	-10.09	-12.75	6.62	1712.47
133	90	43		TH	19.39	-0.10	-4.54	-5.92	-8.19	-13.61	7.66	1710.13
132	91	41		PA	22.37		-2.15	-7.74	-6.64	-14.44	8.38	1706.36
131	92	39		U	26.23		-3.10	-6.75	-5.20	-15.28	8.98	1701.71
130	93	37		NP	31.49		-0.71	-8.58	-3.76	-16.00	9.70	1695.68
129	94	35		PU	37.85		-1.44	-7.47	-2.10	-16.55	10.81	1688.53
127	96	31		CM	53.51		-0.04	-8.19	0.68	-19.42	10.71	1671.31
150	74	76	224	W	157.29		-19.73	-0.75	-38.36	-0.16	-9.08	1592.82
148	76	72		OS	121.29		-17.94	-1.39	-34.59	-1.57	-6.71	1627.25
147	77	70		IR	106.80		-15.09	-0.73	-32.48	-2.31	-5.35	1640.99
146	78	68		PT	90.47		-16.28	-2.14	-30.82	-3.03	-4.41	1656.50
145	79	66		AU	78.12		-13.71	-1.45	-29.43	-3.90	-3.89	1668.07
144	80	64		HG	64.36		-14.43	-3.01	-27.58	-4.68	-2.82	1681.05
143	81	62		TL	54.80		-11.78	-2.22	-25.66	-5.50	-1.71	1689.83
142	82	60		PB	43.96		-12.28	-3.83	-23.50	-6.40	-0.46	1699.88
141	83	58		BI	38.37		-8.64	-3.13	-20.36	-7.36	1.73	1704.68
140	84	56		PO	31.10		-9.62	-4.79	-17.70	-8.08	3.66	1711.18
139	85	54		AT	28.01		-7.10	-3.85	-16.16	-8.97	4.30	1713.49
138	86	52		RN	22.73		-8.34	-5.68	-14.88	-9.77	4.79	1717.98
137	87	50		FR	21.93	-0.04	-5.70	-4.64	-13.48	-10.60	5.36	1718.00
136	88	48		RA	18.80	-0.04	-7.00	-6.52	-12.14	-11.59	5.71	1720.35
135	89	46		AC	20.27	0.07	-4.26	-5.63	-10.70	-12.51	6.24	1718.10
134	90	44		TH	20.02	0.02	-5.09	-7.44	-8.79	-13.36	7.29	1717.56
133	91	42		PA	23.97		-2.71	-6.48	-7.24	-14.22	7.98	1712.83
132	92	40		U	26.01		-3.65	-8.30	-5.81	-15.05	8.59	1710.01
131	93	38		NP	32.25		-1.27	-7.31	-4.37	-15.89	9.19	1702.98
130	94	36		PU	36.78		-1.99	-9.14	-2.71	-16.61	10.13	1697.67
128	96	32		CM	51.89		-0.59	-9.69	0.07	-17.88	11.63	1680.99

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
152	73	79	225	TA	186.57		-19.41	-0.08	-40.84	0.70	-10.46	1572.39
150	75	75		RE	147.14		-17.43	-0.97	-37.16	-0.94	-8.42	1610.25
149	76	73		OS	129.17		-18.16	-0.19	-35.37	-1.58	-7.27	1627.44
148	77	71		IR	113.26		-15.32	-1.62	-33.26	-2.35	-5.92	1642.57
147	78	69		PT	97.59		-16.50	-0.95	-31.60	-3.09	-5.00	1657.45
146	79	67		AU	83.83		-13.93	-2.36	-30.21	-3.81	-4.34	1670.43
145	80	65		HG	70.75		-14.65	-1.67	-28.36	-4.68	-3.36	1682.72
144	81	63		TL	59.64		-12.01	-3.23	-26.44	-5.45	-2.21	1693.06
143	82	61		PB	49.59		-12.50	-2.45	-24.28	-6.28	-0.88	1702.33
142	83	59		BI	42.39		-8.86	-4.06	-21.14	-7.18	1.37	1708.74
141	84	57		PO	35.82		-9.84	-3.35	-18.48	-8.14	3.07	1714.53
140	85	55		AT	31.06		-7.33	-5.01	-16.94	-8.86	3.88	1718.50
139	86	53		RN	26.74		-8.56	-4.07	-15.66	-9.75	4.27	1722.05
138	87	51		FR	24.10		-5.93	-5.91	-14.26	-10.55	4.88	1723.90
137	88	49		RA	22.00	0.09	-7.22	-4.87	-12.92	-11.38	5.38	1725.22
136	89	47		AC	21.60	0.03	-4.48	-6.74	-11.48	-12.37	5.84	1724.84
135	90	45		TH	22.24	-0.04	-5.31	-5.85	-9.57	-13.29	6.82	1723.41
134	91	43		PA	24.38	-0.06	-2.93	-7.66	-8.02	-14.13	7.53	1720.49
133	92	41		U	27.38		-3.88	-6.70	-6.59	-15.00	8.10	1716.71
132	93	39		NP	31.80		-1.49	-8.52	-5.14	-15.83	8.71	1711.50
131	94	37		PU	37.32		-2.22	-7.53	-3.49	-16.67	9.53	1705.20
130	95	35		AM	43.95		-0.12	-9.36	-2.11	-17.39	10.18	1697.79
129	96	33		CM	51.72		-0.82	-8.25	-0.71	-17.94	11.04	1689.24
152	74	78	226	W	173.39		-20.47	-0.59	-39.87	-0.04	-10.10	1592.86
150	76	74		OS	135.76		-18.67	-1.48	-36.11	-1.67	-7.97	1628.92
149	77	72		IR	120.63		-15.83	-0.70	-33.99	-2.32	-6.50	1643.27
148	78	70		PT	103.53		-17.01	-2.13	-32.33	-3.08	-5.60	1659.58
147	79	68		AU	90.43		-14.45	-1.47	-30.95	-3.83	-4.97	1671.90
146	80	66		HG	75.95		-15.16	-2.87	-29.10	-4.55	-3.84	1685.60
145	81	64		TL	65.52		-12.52	-2.19	-27.17	-5.42	-2.78	1695.24
144	82	62		PB	53.92		-13.01	-3.74	-25.02	-6.19	-1.40	1706.07
143	83	60		BI	47.50		-9.37	-2.96	-21.87	-7.01	0.93	1711.70
142	84	58		PO	39.33		-10.35	-4.57	-19.21	-7.92	2.68	1719.09
141	85	56		AT	35.27		-7.84	-3.86	-17.68	-8.88	3.26	1722.36
140	86	54		RN	29.28		-9.07	-5.53	-16.40	-9.60	3.82	1727.57
139	87	52		FR	27.59		-6.44	-4.58	-15.00	-10.49	4.33	1728.49
138	88	50		RA	23.65	0.03	-7.73	-6.42	-13.66	-11.28	4.87	1731.64
137	89	48		AC	24.30	-0.07	-5.00	-5.38	-12.22	-12.12	5.48	1730.21
136	90	46		TH	23.06	-0.13	-5.83	-7.25	-10.31	-13.10	6.40	1730.66
135	91	44		PA	26.09	0.19	-3.44	-6.36	-8.76	-14.02	7.03	1726.86
134	92	42		U	27.28		-4.39	-8.17	-7.32	-14.87	7.62	1724.88
133	93	40		NP	32.66		-2.00	-7.21	-5.88	-15.73	8.20	1718.71
132	94	38		PU	36.36		-2.73	-9.03	-4.22	-16.56	9.03	1714.23
131	95	36		AM	43.98		-0.63	-8.04	-2.85	-17.40	9.56	1705.83
130	96	34		CM	49.91		-1.33	-9.88	-1.45	-18.12	10.24	1699.12
152	75	77	227	RE	162.71		-17.97	-0.61	-38.43	-0.57	-9.44	1610.82
150	77	73		IR	127.19		-15.85	-1.51	-34.53	-2.21	-7.17	1644.77
149	78	71		PT	110.88		-17.04	-0.73	-32.87	-2.85	-6.15	1660.31
148	79	69		AU	96.35		-14.47	-2.15	-31.48	-3.62	-5.53	1674.05
147	80	67		HG	82.53		-15.19	-1.49	-29.63	-4.36	-4.43	1687.09
146	81	65		TL	70.70		-12.54	-2.90	-27.71	-5.08	-3.22	1698.14
145	82	63		PB	59.78		-13.03	-2.21	-25.55	-5.95	-1.94	1708.28
144	83	61		BI	51.81		-9.40	-3.77	-22.41	-6.72	0.44	1715.46
143	84	59		PO	44.42		-10.38	-2.98	-19.75	-7.55	2.27	1722.07
142	85	57		AT	38.76		-7.86	-4.59	-18.21	-8.45	2.90	1726.95
141	86	55		RN	33.47		-9.09	-3.88	-16.93	-9.41	3.22	1731.46
140	87	53		FR	30.11		-6.46	-5.55	-15.53	-10.13	3.91	1734.03
139	88	51		RA	27.12	-0.04	-7.75	-4.60	-14.19	-11.02	4.35	1736.24
138	89	49		AC	25.93	0.07	-5.02	-6.44	-12.75	-11.82	5.00	1736.65
137	90	47		TH	25.74	-0.07	-5.85	-5.40	-10.84	-12.65	6.07	1736.06
136	91	45		PA	26.89	0.05	-3.47	-7.27	-9.29	-13.64	6.64	1734.13
135	92	43		U	28.97		-4.41	-6.38	-7.86	-14.56	7.16	1731.27
134	93	41		NP	32.54		-2.03	-8.19	-6.41	-15.40	7.75	1726.91
133	94	39		PU	37.20		-2.75	-7.23	-4.76	-16.27	8.54	1721.47
132	95	37		AM	43.00		-0.65	-9.06	-3.38	-17.10	9.09	1714.89
131	96	35		CM	49.92		-1.35	-8.06	-1.98	-17.94	9.65	1707.18

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
152	76	76	228	OS	150.73							
151	77	74		IR	134.71		-19.27	-1.18	-37.23	-1.17	-8.98	1630.09
150	78	72		PT	116.87		-16.42	-0.56	-35.12	-2.06	-7.76	1645.33
149	79	70		AU	103.13		-17.61	-2.08	-33.46	-2.80	-6.84	1662.38
148	80	68		HG	87.88		-15.04	-1.30	-32.08	-3.45	-6.10	1675.35
147	81	66		TL	76.71		-15.76	-2.72	-30.23	-4.21	-5.01	1689.81
146	82	64		PB	64.38		-13.11	-2.06	-28.30	-4.96	-3.83	1700.20
145	83	62		BI	57.10		-13.60	-3.47	-26.15	-5.68	-2.40	1711.75
144	84	60		PO	48.15		-9.97	-2.78	-23.00	-6.55	-0.12	1718.24
143	85	58		AT	43.27		-10.95	-4.34	-20.34	-7.32	1.76	1726.41
142	86	56		RN	36.38		-8.43	-3.55	-18.81	-8.14	2.47	1730.51
141	87	54		FR	33.73		-9.67	-5.16	-17.53	-9.04	2.85	1736.62
140	88	52		RA	29.07	0.07	-7.03	-4.46	-16.12	-10.00	3.30	1738.49
139	89	50		AC	28.82	-0.13	-8.33	-6.12	-14.79	-10.72	3.92	1742.36
138	90	48		TH	26.79	0.01	-5.59	-5.18	-13.34	-11.62	4.46	1741.83
137	91	46		PA	28.99	0.11	-6.42	-7.01	-11.44	-12.41	5.57	1743.07
136	92	44		U	29.19	-0.04	-4.04	-5.97	-9.89	-13.24	6.29	1740.10
135	93	42		NP	33.66		-4.98	-7.85	-8.45	-14.23	6.75	1739.11
134	94	40		PU	36.51		-2.60	-6.96	-7.01	-15.15	7.27	1733.86
133	95	38		AM	43.27		-3.32	-8.77	-5.35	-16.00	8.08	1730.23
132	96	36		CM	48.36		-1.22	-7.80	-3.98	-16.86	8.59	1722.69
130	98	32		CF	64.77		-1.92	-9.63	-2.58	-17.69	9.16	1716.81
							-0.54	-10.47	0.27	-19.25	10.45	1698.84
152	77	75	229	IR	141.41							
151	78	73		PT	124.21		-16.61	-1.37	-35.88	-1.92	-8.15	1646.70
150	79	71		AU	108.94		-17.79	-0.74	-34.22	-2.82	-7.39	1663.12
149	80	69		HG	94.47		-15.23	-2.26	-32.83	-3.56	-6.75	1677.61
148	81	67		TL	81.87		-15.94	-1.48	-30.98	-4.20	-5.54	1691.29
147	82	65		PB	70.21		-13.30	-2.91	-29.06	-4.97	-4.38	1703.11
146	83	63		BI	61.52		-13.79	-2.24	-26.90	-5.71	-2.97	1713.99
145	84	61		PO	53.26		-10.15	-3.65	-23.76	-6.43	-0.54	1721.90
144	85	59		AT	46.82		-11.13	-2.97	-21.10	-7.30	1.24	1729.38
143	86	57		RN	40.71		-8.62	-4.52	-19.56	-8.08	2.01	1735.03
142	87	55		FR	36.45		-9.85	-3.74	-18.28	-8.90	2.47	1740.36
141	88	53		RA	32.50		-7.22	-5.35	-16.88	-9.80	2.96	1743.83
140	89	51		AC	30.59	0.04	-8.51	-4.64	-15.54	-10.76	3.34	1747.00
139	90	49		TH	29.51	0.02	-5.77	-6.30	-14.10	-11.48	4.07	1748.13
138	91	47		PA	29.86	0.03	-6.61	-5.36	-12.19	-12.37	5.08	1748.43
137	92	45		U	31.11	-0.08	-4.22	-7.20	-10.64	-13.17	5.83	1747.30
136	93	43		NP	33.70		-5.17	-6.16	-9.21	-14.00	6.44	1745.27
135	94	41		PU	37.44		-2.78	-8.03	-7.77	-14.99	6.90	1741.89
134	95	39		AM	42.39		-3.51	-7.14	-6.11	-15.91	7.63	1737.37
133	96	37		CM	48.45		-1.41	-8.95	-4.73	-16.76	8.16	1731.64
131	98	33		CF	64.02		-2.11	-7.99	-3.33	-17.62	8.70	1724.80
							-0.72	-8.82	-0.48	-19.29	9.88	1707.66
153	77	76	230	IR	149.28							
152	78	74		PT	130.49		-17.03	-0.20	-36.48	-1.57	-8.39	1646.90
151	79	72		AU	115.85		-18.21	-1.79	-34.82	-2.53	-7.69	1664.91
150	80	70		HG	99.86		-15.65	-1.16	-33.44	-3.42	-7.20	1678.77
149	81	68		TL	88.04		-16.37	-2.68	-31.59	-4.17	-6.10	1693.97
148	82	66		PB	74.95		-13.72	-1.90	-29.66	-4.81	-4.82	1705.01
147	83	64		BI	66.92		-14.21	-3.33	-27.51	-5.57	-3.42	1717.32
146	84	62		PO	57.25		-10.57	-2.67	-24.36	-6.32	-1.02	1724.56
145	85	60		AT	51.51		-11.55	-4.07	-21.71	-7.04	0.91	1733.45
144	86	58		RN	43.84		-9.04	-3.39	-20.17	-7.91	1.58	1738.42
143	87	56		FR	40.36		-10.27	-4.94	-18.89	-8.68	2.09	1745.30
142	88	54		RA	34.81		-7.64	-4.16	-17.49	-9.51	2.67	1747.99
141	89	52		AC	33.60	-0.13	-8.93	-5.77	-16.15	-10.41	3.10	1752.77
140	90	50		TH	30.85	0.03	-6.20	-5.06	-14.71	-11.37	3.59	1753.19
139	91	48		PA	32.15	0.08	-7.03	-6.73	-12.80	-12.09	4.77	1755.16
138	92	46		U	31.56	-0.05	-4.65	-5.78	-11.25	-12.98	5.43	1753.08
137	93	44		NP	35.19	0.09	-5.59	-7.62	-9.81	-13.77	6.07	1752.89
136	94	42		PU	37.06		-3.20	-6.58	-8.37	-14.61	6.68	1748.47
135	95	40		AM	42.90		-3.93	-8.45	-6.71	-15.59	7.35	1745.82
134	96	38		CM	47.15		-1.83	-7.56	-5.34	-16.51	7.81	1739.20
133	97	36		BK	55.37		-2.53	-9.37	-3.94	-17.36	8.36	1734.17
132	98	34		CF	61.85		-0.37	-8.41	-2.48	-18.22	8.96	1725.17
							-1.14	-10.23	-1.09	-19.05	9.52	1717.90

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
153	78	75	231	PT	138.33		-18.24	-0.23	-35.27	-2.02	-7.94	1665.14
152	79	73		AU	122.10		-15.67	-1.82	-33.89	-2.98	-7.52	1680.59
151	80	71		HG	106.75		-16.39	-1.19	-32.04	-3.87	-6.56	1695.16
150	81	69		TL	93.40		-13.75	-2.71	-30.11	-4.61	-5.37	1707.72
149	82	67		PB	81.09		-14.24	-1.93	-27.96	-5.26	-3.87	1719.25
148	83	65		BI	71.64		-10.60	-3.35	-24.81	-6.02	-1.48	1727.92
147	84	63		PO	62.63		-11.58	-2.69	-22.15	-6.77	0.43	1736.14
146	85	61		AT	55.48		-9.06	-4.10	-20.62	-7.49	1.25	1742.52
145	86	59		RN	48.50		-10.30	-3.41	-19.34	-8.36	1.66	1748.71
144	87	57		FR	43.47		-7.66	-4.97	-17.93	-9.13	2.29	1752.96
143	88	55		RA	38.70		-8.96	-4.19	-16.60	-9.95	2.80	1756.95
142	89	53		AC	35.88	-0.02	-6.22	-5.79	-15.15	-10.85	3.34	1758.99
141	90	51		TH	33.83	0.03	-7.05	-5.09	-13.25	-11.81	4.29	1760.25
140	91	49		PA	33.47	0.05	-4.67	-6.75	-11.70	-12.53	5.12	1759.83
139	92	47		U	33.82	0.04	-5.61	-5.81	-10.26	-13.43	5.66	1758.69
138	93	45		NP	35.62	-0.04	-3.23	-7.65	-8.82	-14.22	6.31	1756.12
137	94	43		PU	38.53		-3.96	-6.60	-7.16	-15.05	7.14	1752.43
136	95	41		AM	42.49		-1.86	-8.48	-5.79	-16.04	7.52	1747.68
135	96	39		CM	47.63		-2.56	-7.59	-4.39	-16.96	8.00	1741.76
134	97	37		BK	54.04		-0.39	-9.40	-2.92	-17.81	8.62	1734.56
133	98	35		CF	61.49		-1.17	-8.44	-1.54	-18.67	9.14	1726.33
153	79	74	232	AU	129.36		-16.26	-0.81	-34.50	-2.63	-7.77	1681.40
152	80	72		HG	112.41		-16.98	-2.40	-32.65	-3.59	-6.89	1697.56
151	81	70		TL	99.70		-14.33	-1.78	-30.73	-4.48	-5.85	1709.50
150	82	68		PB	85.87		-14.82	-3.30	-28.57	-5.23	-4.44	1722.54
149	83	66		BI	77.20		-11.19	-2.52	-25.42	-5.87	-1.94	1730.43
148	84	64		PO	66.76		-12.17	-3.94	-22.77	-6.63	-0.04	1740.08
147	85	62		AT	60.27		-9.65	-3.28	-21.23	-7.38	0.75	1745.80
146	86	60		RN	51.88		-10.89	-4.69	-19.95	-8.10	1.31	1753.40
145	87	58		FR	47.54		-8.25	-4.00	-18.55	-8.97	1.84	1756.96
144	88	56		RA	41.21		-9.55	-5.56	-17.21	-9.74	2.41	1762.51
143	89	54		AC	39.17		-6.81	-4.77	-15.77	-10.57	3.02	1763.76
142	90	52		TH	35.52	0.01	-7.64	-6.38	-13.86	-11.47	4.03	1766.63
141	91	50		PA	35.86	-0.10	-5.26	-5.68	-12.31	-12.43	4.62	1765.51
140	92	48		U	34.56	-0.07	-6.20	-7.34	-10.87	-13.15	5.34	1766.03
139	93	46		NP	37.29	0.16	-3.82	-6.40	-9.43	-14.04	5.88	1762.51
138	94	44		PU	38.36	0.00	-4.54	-8.23	-7.77	-14.84	6.75	1760.66
137	95	42		AM	43.37		-2.44	-7.19	-6.40	-15.67	7.29	1754.87
136	96	40		CM	46.64		-3.14	-9.07	-5.00	-16.65	7.70	1750.82
135	97	38		BK	53.94		-0.98	-8.18	-3.54	-17.57	8.25	1742.74
134	98	36		CF	59.57		-1.76	-9.99	-2.15	-18.42	8.79	1736.32
153	80	73	233	HG	119.54		-17.11	-0.94	-33.37	-3.35	-7.09	1698.51
152	81	71		TL	105.24		-14.46	-2.53	-31.44	-4.31	-6.12	1712.03
151	82	69		PB	92.03		-14.95	-1.91	-29.29	-5.20	-4.86	1724.45
150	83	67		BI	81.84		-11.32	-3.43	-26.14	-5.94	-2.46	1733.86
149	84	65		PO	72.19		-12.30	-2.65	-23.48	-6.59	-0.45	1742.73
148	85	63		AT	64.27		-9.78	-4.07	-21.95	-7.35	0.33	1749.87
147	86	61		RN	56.54		-11.01	-3.41	-20.67	-8.10	0.86	1756.81
146	87	59		FR	50.79		-8.38	-4.82	-19.27	-8.82	1.54	1761.78
145	88	57		RA	45.15		-9.68	-4.13	-17.93	-9.69	2.01	1766.64
144	89	55		AC	41.56		-6.94	-5.69	-16.49	-10.46	2.68	1769.45
143	90	53		TH	38.69	0.07	-7.77	-4.90	-14.58	-11.28	3.76	1771.53
142	91	51		PA	37.43	0.04	-5.39	-6.51	-13.03	-12.19	4.41	1772.02
141	92	49		U	36.82	0.01	-6.33	-5.81	-11.59	-13.14	4.89	1771.84
140	93	47		NP	37.90	0.02	-3.95	-7.47	-10.15	-13.87	5.61	1769.98
139	94	45		PU	39.91	-0.12	-4.67	-6.53	-8.49	-14.76	6.38	1767.19
138	95	43		AM	43.08		-2.57	-8.36	-7.12	-15.55	6.96	1763.23
137	96	41		CM	47.39		-3.27	-7.32	-5.72	-16.39	7.52	1758.14
136	97	39		BK	52.81		-1.11	-9.19	-4.26	-17.37	8.00	1751.93
135	98	37		CF	59.34		-1.88	-8.31	-2.87	-18.29	8.47	1744.62
153	81	72	234	TL	112.08		-14.75	-1.23	-31.86	-3.76	-6.19	1713.26
152	82	70		PB	97.29		-15.24	-2.82	-29.70	-4.72	-5.00	1727.27
151	83	68		BI	87.72		-11.60	-2.19	-26.55	-5.62	-2.74	1736.05
150	84	66		PO	76.55		-12.58	-3.71	-23.90	-6.36	-0.83	1746.44
149	85	64		AT	69.41		-10.07	-2.93	-22.36	-7.00	0.06	1752.80
148	86	62		RN	60.26		-11.30	-4.35	-21.08	-7.76	0.58	1761.16
147	87	60		FR	55.17		-8.66	-3.69	-19.68	-8.51	1.24	1765.47
146	88	58		RA	48.12		-9.96	-5.10	-18.34	-9.23	1.86	1771.74
145	89	56		AC	45.22		-7.22	-4.41	-16.90	-10.10	2.43	1773.86
144	90	54		TH	40.79	0.20	-8.05	-5.97	-14.99	-10.87	3.56	1777.50
143	91	52		PA	40.31	-0.02	-5.67	-5.19	-13.44	-11.70	4.29	1777.20
142	92	50		U	38.10	-0.00	-6.62	-6.79	-12.00	-12.60	4.82	1778.63
141	93	48		NP	39.88	-0.04	-4.23	-6.09	-10.56	-13.56	5.31	1776.07
140	94	46		PU	40.23	-0.12	-4.96	-7.75	-8.90	-14.28	6.24	1774.94
139	95	44		AM	44.34		-2.86	-6.81	-7.53	-15.17	6.72	1770.04
138	96	42		CM	46.81		-3.56	-8.65	-6.13	-15.97	7.33	1766.79
137	97	40		BK	53.28		-1.40	-7.60	-4.67	-16.80	7.96	1759.54
136	98	38		CF	57.93		-2.17	-9.48	-3.28	-17.78	8.36	1754.10

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
153	82	71	235	PB	104.05		-15.32	-1.31	-30.07	-4.13	-5.12	1728.58
152	83	69		BI	92.89		-11.69	-2.90	-26.92	-5.09	-2.94	1738.95
151	84	67		PO	82.35		-12.67	-2.28	-24.27	-5.98	-1.17	1748.72
150	85	65		AT	73.69		-10.15	-3.80	-22.73	-6.73	-0.38	1756.59
149	86	63		RN	65.32		-11.38	-3.02	-21.45	-7.37	0.26	1764.18
148	87	61		FR	58.80		-8.75	-4.44	-20.05	-8.13	0.90	1769.91
147	88	59		RA	52.41		-10.05	-3.78	-18.71	-8.88	1.49	1775.52
146	89	57		AC	48.10		-7.31	-5.19	-17.27	-9.60	2.21	1779.05
145	90	55		TH	44.37		-8.14	-4.50	-15.36	-10.47	3.25	1782.00
144	91	53		PA	42.33	0.02	-5.76	-6.06	-13.81	-11.24	4.02	1783.26
143	92	51		U	40.90	-0.01	-6.70	-5.27	-12.37	-12.07	4.64	1783.91
142	93	49		NP	41.07	0.04	-4.32	-6.88	-10.93	-12.97	5.18	1782.95
141	94	47		PU	42.13	-0.03	-5.04	-6.17	-9.27	-13.93	5.88	1781.11
140	95	45		AM	44.57		-2.94	-7.84	-7.90	-14.65	6.53	1777.88
139	96	43		CM	47.99		-3.64	-6.90	-6.50	-15.54	7.04	1773.69
138	97	41		BK	52.62		-1.48	-8.73	-5.04	-16.34	7.70	1768.27
137	98	39		CF	58.31		-2.25	-7.69	-3.65	-17.17	8.26	1761.79
136	99	37		E	65.20		-0.02	-9.56	-2.19	-18.15	8.73	1754.13
153	83	70	236	BI	99.26		-12.08	-1.70	-27.40	-4.61	-2.86	1760.66
152	84	68		PO	87.12		-13.06	-3.29	-24.74	-5.57	-1.17	1752.01
151	85	66		AT	79.09		-10.54	-2.66	-23.21	-6.46	-0.53	1759.26
150	86	64		RN	69.20		-11.77	-4.19	-21.93	-7.20	0.01	1768.37
149	87	62		FR	63.46		-9.14	-3.41	-20.52	-7.85	0.77	1773.32
148	88	60		RA	55.65		-10.44	-4.83	-19.19	-8.61	1.35	1780.35
147	89	58		AC	52.00		-7.70	-4.17	-17.74	-9.36	2.04	1783.22
146	90	56		TH	46.86		-8.53	-5.58	-15.84	-10.08	3.23	1787.58
145	91	54		PA	45.51	-0.35	-6.15	-4.89	-14.29	-10.95	3.91	1788.15
144	92	52		U	42.52	0.01	-7.09	-6.45	-12.85	-11.72	4.57	1790.35
143	93	50		NP	43.48	0.05	-4.71	-5.66	-11.41	-12.54	5.19	1788.61
142	94	48		PU	42.93	0.01	-5.43	-7.27	-9.75	-13.44	5.95	1788.38
141	95	46		AM	46.08	0.29	-3.33	-6.56	-8.38	-14.40	6.36	1784.45
140	96	44		CM	47.83		-4.03	-8.23	-6.98	-15.12	7.04	1781.91
139	97	42		BK	53.41		-1.87	-7.29	-5.51	-16.02	7.61	1775.56
138	98	40		CF	57.26		-2.64	-9.12	-4.13	-16.81	8.20	1770.92
137	99	38		E	65.19		-0.41	-8.08	-2.67	-17.64	8.83	1762.21
153	84	69	237	PO	93.10		-13.45	-2.10	-25.53	-5.39	-1.36	1754.11
152	85	67		AT	83.48		-10.94	-3.69	-23.99	-6.35	-0.79	1762.95
151	86	65		RN	74.21		-12.17	-3.06	-22.71	-7.25	-0.40	1771.43
150	87	63		FR	66.96		-9.54	-4.58	-21.31	-7.99	0.26	1777.90
149	88	61		RA	59.92		-10.83	-3.80	-19.97	-8.63	0.95	1784.15
148	89	59		AC	54.85		-8.09	-5.23	-18.53	-9.39	1.63	1788.44
147	90	57		TH	50.37		-8.92	-4.56	-16.62	-10.14	2.79	1792.14
146	91	55		PA	47.61	0.03	-6.54	-5.97	-15.07	-10.86	3.62	1794.12
145	92	53		U	45.31	0.03	-7.49	-5.28	-13.63	-11.73	4.19	1795.64
144	93	51		NP	44.71	-0.05	-5.10	-6.84	-12.19	-12.50	4.86	1795.45
143	94	49		PU	44.94	-0.05	-5.83	-6.06	-10.53	-13.33	5.69	1794.44
142	95	47		AM	46.49	0.06	-3.73	-7.67	-9.16	-14.23	6.17	1792.11
141	96	45		CM	48.94		-4.43	-6.96	-7.76	-15.19	6.61	1788.87
140	97	43		BK	52.85		-2.27	-8.62	-6.30	-15.91	7.35	1784.18
139	98	41		CF	57.66		-3.04	-7.68	-4.91	-16.80	7.84	1778.60
138	99	39		E	63.75		-0.81	-9.52	-3.45	-17.60	8.51	1771.72
153	85	68	238	AT	89.39		-11.00	-2.16	-24.45	-5.85	-0.76	1765.11
152	86	66		RN	78.53		-12.23	-3.75	-23.17	-6.81	-0.44	1775.18
151	87	64		FR	71.90		-9.60	-3.12	-21.77	-7.70	0.07	1781.03
150	88	62		RA	63.35		-10.89	-4.64	-20.43	-8.45	0.66	1788.80
149	89	60		AC	59.06		-8.16	-3.87	-18.99	-9.09	1.46	1792.31
148	90	58		TH	53.15		-8.99	-5.29	-17.08	-9.85	2.61	1797.43
147	91	56		PA	51.05		-6.61	-4.63	-15.53	-10.60	3.41	1798.75
146	92	54		U	47.35	0.06	-7.55	-6.03	-14.09	-11.32	4.13	1801.67
145	93	52		NP	47.43	0.03	-5.17	-5.35	-12.65	-12.19	4.70	1800.80
144	94	50		PU	46.11	-0.01	-5.89	-6.90	-10.99	-12.96	5.58	1801.34
143	95	48		AM	48.44	0.06	-3.79	-6.12	-9.62	-13.79	6.13	1798.23
142	96	46		CM	49.29	-0.11	-4.49	-7.73	-8.22	-14.69	6.63	1796.60
141	97	44		BK	53.90		-2.33	-7.02	-6.76	-15.65	7.14	1791.20
140	98	42		CF	57.04		-3.10	-8.69	-5.37	-16.37	7.80	1787.28
139	99	40		E	64.07		-0.87	-7.74	-3.91	-17.26	8.37	1779.47
153	86	67	239	RN	84.25		-12.43	-2.35	-23.43	-6.11	-0.52	1777.53
152	87	65		FR	76.03		-9.79	-3.94	-22.02	-7.07	-0.08	1784.97
151	88	63		RA	68.11		-11.09	-3.32	-20.69	-7.96	0.37	1792.11
150	89	61		AC	62.29		-8.35	-4.84	-19.24	-8.70	1.06	1797.15
149	90	59		TH	57.16		-9.18	-4.06	-17.34	-9.35	2.33	1801.49
148	91	57		PA	53.64		-6.80	-5.48	-15.79	-10.11	3.11	1804.23
147	92	55		U	50.60	0.02	-7.74	-4.82	-14.35	-10.86	3.81	1806.49
146	93	53		NP	49.28	-0.02	-5.36	-6.23	-12.91	-11.58	4.53	1807.03
145	94	51		PU	48.64	0.06	-6.08	-5.54	-11.25	-12.45	5.32	1806.89
144	95	49		AM	49.41	0.03	-3.98	-7.10	-9.88	-13.22	5.92	1805.33
143	96	47		CM	51.04	-0.08	-4.68	-6.31	-8.48	-14.04	6.49	1802.92
142	97	45		BK	54.05		-2.52	-7.92	-7.01	-14.94	7.05	1799.12
141	98	43		CF	57.90		-3.30	-7.22	-5.63	-15.90	7.48	1794.50
140	99	41		E	63.26		-1.06	-8.88	-4.17	-16.62	8.22	1788.35

TABLE VI (*Continued*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
153	87	66	240	FR	81.40		-10.14	-2.71	-22.57	-6.65	-0.12	1787.68
152	88	64		RA	71.88		-11.44	-4.30	-21.23	-7.61	0.25	1796.41
151	89	62		AC	66.69		-8.70	-3.67	-19.79	-8.51	0.80	1800.82
150	90	60		TH	60.05		-9.53	-5.19	-17.88	-9.25	1.97	1806.68
149	91	58		PA	57.30		-7.15	-4.41	-16.33	-9.89	2.87	1808.64
148	92	56		U	52.83	0.12	-8.10	-5.83	-14.90	-10.66	3.55	1812.33
147	93	54		NP	52.17	-0.07	-5.71	-5.17	-13.46	-11.40	4.24	1812.20
146	94	52		PU	50.13	-0.06	-6.44	-6.58	-11.80	-12.12	5.18	1813.47
145	95	50		AM	51.59	0.10	-4.34	-5.89	-10.42	-12.99	5.69	1811.22
144	96	48		CM	51.66	-0.08	-5.04	-7.45	-9.02	-13.77	6.31	1810.37
143	97	46		BK	55.46		-2.88	-6.67	-7.56	-14.59	6.95	1805.79
142	98	44		CF	57.69		-3.65	-8.27	-6.17	-15.49	7.44	1802.77
141	99	42		E	63.77		-1.42	-7.57	-4.71	-16.45	7.94	1795.92
153	88	65	241	RA	77.05		-11.63	-2.90	-21.78	-7.20	0.41	1799.31
152	89	63		AC	70.28		-8.89	-4.49	-20.33	-8.16	0.89	1805.30
151	90	61		TH	64.26		-9.73	-3.86	-18.43	-9.05	1.91	1810.54
150	91	59		PA	59.99		-7.34	-5.38	-16.88	-9.79	2.72	1814.02
149	92	57		U	56.30		-8.29	-4.60	-15.44	-10.44	3.51	1816.93
148	93	55		NP	54.22	0.01	-5.90	-6.03	-14.00	-11.20	4.19	1818.23
147	94	53		PU	52.83	-0.01	-6.63	-5.36	-12.34	-11.95	5.10	1818.83
146	95	51		AM	52.89	0.06	-4.53	-6.77	-10.97	-12.67	5.75	1818.00
145	96	49		CM	53.65	0.05	-5.23	-6.09	-9.57	-13.54	6.28	1816.45
144	97	47		BK	55.89	-0.09	-3.07	-7.64	-8.10	-14.31	6.97	1813.43
143	98	45		CF	58.91		-3.84	-6.86	-6.72	-15.13	7.54	1809.63
142	99	43		E	63.37		-1.61	-8.47	-5.26	-16.03	8.09	1804.38
153	89	64	242	AC	75.26		-9.08	-3.08	-20.71	-7.57	0.93	1808.39
152	90	62		TH	67.65		-9.91	-4.67	-18.80	-8.53	1.88	1815.21
151	91	60		PA	64.02		-7.53	-4.05	-17.25	-9.43	2.54	1818.07
150	92	58		U	58.81		-8.47	-5.57	-15.82	-10.17	3.23	1822.50
149	93	56		NP	57.50	-0.10	-6.09	-4.79	-14.37	-10.81	4.03	1823.02
148	94	54		PU	54.70	-0.01	-6.81	-6.21	-12.72	-11.58	4.92	1825.04
147	95	52		AM	55.41	-0.01	-4.71	-5.55	-11.34	-12.32	5.55	1823.55
146	96	50		CM	54.76	0.00	-5.41	-6.96	-9.94	-13.04	6.23	1823.41
145	97	48		BK	57.69	0.13	-3.25	-6.27	-8.48	-13.91	6.82	1819.70
144	98	46		CF	59.15		-4.02	-7.83	-7.09	-14.68	7.44	1817.46
143	99	44		E	64.40		-1.79	-7.04	-5.63	-15.51	8.07	1811.42
153	90	63	243	TH	72.49		-10.06	-3.23	-19.14	-7.91	1.96	1818.45
152	91	61		PA	67.27		-7.68	-4.82	-17.59	-8.87	2.55	1822.89
151	92	59		U	62.69		-8.62	-4.19	-16.15	-9.76	3.10	1826.69
150	93	57		NP	59.86		-6.24	-5.71	-14.71	-10.50	3.80	1828.73
149	94	55		PU	57.83	0.11	-6.96	-4.94	-13.05	-11.15	4.81	1829.98
148	95	53		AM	57.12	-0.04	-4.86	-6.36	-11.67	-11.91	5.42	1829.90
147	96	51		CM	57.14	-0.03	-5.56	-5.70	-10.28	-12.66	6.08	1829.11
146	97	49		BK	58.65	0.00	-3.40	-7.11	-8.81	-13.38	6.82	1826.81
145	98	47		CF	60.80	-0.03	-4.17	-6.42	-7.42	-14.25	7.34	1823.88
144	99	45		E	64.50		-1.94	-7.98	-5.97	-15.02	8.02	1819.40
153	91	62	244	PA	71.75		-8.03	-3.58	-18.09	-8.40	2.64	1826.47
152	92	60		U	65.58		-8.97	-5.17	-16.65	-9.37	3.11	1831.86
151	93	58		NP	63.39		-6.59	-4.55	-15.21	-10.26	3.66	1833.28
150	94	56		PU	59.84	0.13	-7.31	-6.07	-13.55	-11.00	4.58	1836.04
149	95	54		AM	59.91	-0.04	-5.21	-5.29	-12.17	-11.65	5.31	1835.19
148	96	52		CM	58.50	-0.02	-5.91	-6.71	-10.77	-12.41	5.95	1835.82
147	97	50		BK	60.68	-0.02	-3.75	-6.05	-9.31	-13.15	6.66	1832.86
146	98	48		CF	61.42	-0.03	-4.52	-7.46	-7.92	-13.88	7.33	1831.33
145	99	46		E	65.80		-2.29	-6.77	-6.47	-14.74	7.92	1826.17
153	92	61	245	U	69.84		-9.20	-3.82	-17.23	-8.99	3.16	1835.68
152	93	59		NP	66.05		-6.82	-5.41	-15.79	-9.95	3.64	1838.68
151	94	57		PU	63.13	-0.05	-7.55	-4.78	-14.13	-10.84	4.40	1840.82
150	95	55		AM	61.68	-0.11	-5.45	-6.30	-12.76	-11.59	5.04	1841.49
149	96	53		CM	61.05	0.16	-6.15	-5.52	-11.36	-12.23	5.79	1841.34
148	97	51		BK	61.80	0.07	-3.98	-6.94	-9.90	-12.99	6.49	1839.80
147	98	49		CF	63.21	-0.04	-4.76	-6.28	-8.51	-13.74	7.13	1837.61
146	99	47		E	66.18	-0.01	-2.53	-7.69	-7.05	-14.46	7.87	1833.86
153	93	60	246	NP	69.99		-7.13	-4.13	-16.34	-9.54	3.55	1842.81
152	94	58		PU	65.48	0.19	-7.86	-5.72	-14.68	-10.50	4.25	1846.54
151	95	56		AM	64.66	-0.23	-5.76	-5.09	-13.31	-11.39	4.73	1846.58
150	96	54		CM	62.51	-0.09	-6.46	-6.61	-11.91	-12.13	5.39	1847.95
149	97	52		BK	64.04	-0.02	-4.30	-5.83	-10.44	-12.78	6.21	1845.64
148	98	50		CF	64.02	-0.03	-5.07	-7.26	-9.06	-13.54	6.83	1844.87
147	99	48		E	67.66	0.20	-2.84	-6.60	-7.60	-14.29	7.54	1840.46
153	94	59	247	PU	69.44		-7.84	-4.11	-14.98	-9.84	4.33	1850.66
152	95	57		AM	67.03	-0.12	-5.74	-5.70	-13.61	-10.80	4.74	1852.29
151	96	55		CM	65.50	0.04	-6.44	-5.08	-12.21	-11.69	5.25	1853.03
150	97	53		BK	65.51	0.07	-4.28	-6.60	-10.74	-12.43	5.97	1852.23
149	98	51		CF	66.27	0.07	-5.06	-5.82	-9.35	-13.08	6.71	1850.69
148	99	49		E	68.49	-0.05	-2.82	-7.24	-7.90	-13.84	7.41	1847.70

TABLE VI (*Conclusion*)

N	Z	N-Z	A	EL	MASS EXCESS (MEV)	CALC. - EXP. (MEV)	E(P) (MEV)	E(N) (MEV)	E(2P) (MEV)	E(2N) (MEV)	E(HE4) (MEV)	BINDING ENERGY (MEV)
153	95	58	248	AM	70.44		-6.29	-4.66	-14.13	-10.36	4.63	1856.94
152	96	56		CM	67.33	0.06	-6.99	-6.25	-12.73	-11.32	5.07	1859.27
151	97	54		BK	67.97	0.01	-4.82	-5.62	-11.27	-12.22	5.64	1857.85
150	98	52		CF	67.21	-0.10	-5.60	-7.14	-9.88	-12.96	6.28	1857.83
149	99	50		E	70.20	0.08	-3.37	-6.36	-8.42	-13.60	7.10	1854.06
153	96	57	249	CM	70.73	0.12	-7.00	-4.67	-13.28	-10.91	5.18	1863.94
152	97	55		BK	69.78	0.03	-4.84	-6.26	-11.82	-11.88	5.68	1864.11
151	98	53		CF	69.65	0.02	-5.61	-5.63	-10.43	-12.77	6.17	1863.46
150	99	51		E	71.12	0.08	-3.38	-7.15	-8.98	-13.51	6.89	1861.21
153	97	56	250	BK	72.87	-0.04	-5.16	-4.99	-12.15	-11.25	5.78	1869.10
152	98	54		CF	71.14	-0.01	-5.93	-6.58	-10.77	-12.21	6.21	1870.04
151	99	52		E	73.24	0.02	-3.70	-5.95	-9.31	-13.10	6.77	1867.16
153	98	55	251	CF	73.85	0.02	-6.31	-5.36	-11.46	-11.94	5.92	1875.40
152	99	53		E	74.36	-0.10	-4.07	-6.95	-10.00	-12.90	6.42	1874.11
153	99	54	252	E	77.00	-0.14	-4.14	-5.43	-10.44	-12.38	6.61	1879.54

$IBSYS